

BYRENHEIDT (A.)

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Byrenheidt (A.)

HYDROPATHY

OR THE

TREATMENT OF DISEASES

BY

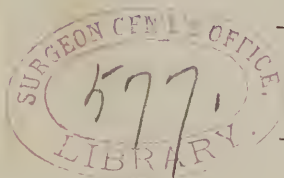
WATER,

ADAPTED TO WARM CLIMATES,

BY

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OF NEW ORLEANS.



—Si quid novisti rectius istis
Candidus imperti: si non, his utere mecum.

Hor. Epist. VI.—Lib. I.

NEW ORLEANS,

1844.

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1844

Fellow #4539, no. 3

NATIONAL INSTITUTE OF MEDICINE

Washington, D. C.

PART I.

Explanation of the general Principles of Hydropathy.

THE AUTHOR, in commending his work to the favorable notice of the reader, deems it necessary to say a few words, respecting the title it bears.

The principles of Hydropathy, considered in a general point of view, are like all great scientific truths, the same for all climates; but their application must naturally be modified, according to the peculiarities of each. He has necessarily been guided, in his first essays of this new method of treatment, by the principles laid down in the works, published in the comparatively cold climates of Europe; which have, however, proved amply sufficient to enable him to arrive at the happiest results, in the warm latitude of Louisiana. Perhaps the most interesting, as certainly it is the most novel, feature in this treatise, will be found in the modifications which he has thought adviseable to introduce occasionally, in the application of this treatment to diseases, which have fallen under his observation, in the climate wherein he resides. Of course, this circumstance has imposed on him the double task of producing it in a general, and commenting on it, in a particular manner. He has, therefore, thought proper to give it the rather wide designation of "HYDROPATHY, ADAPTED TO WARM CLIMATES:"—the first part of the work, (the present,) containing an explanation of the System of Priessnitz; and the second, (now in the press,) comprising cited authorities and cases from his own practice.

P R E F A C E .

ACTUATED by no other motive than that of public utility, I purpose to explain, in the following pages, a method of curing Diseases by Cold Water, commonly called the HYDROPATHIC, or *Cold Water Treatment*; one entirely new in America; for, although it has been practised in Germany, for the last fifteen years, it has never to my knowledge, been investigated by Physicians in this country. In Germany, where it originated, (a countryman named Priessnitz being its discoverer,) its efficacy has been fully substantiated by the most brilliant and continued success. A great number of Diseases which had long resisted the ordinary resources of the healing art, and had proved totally intractable to all the usual remedial agents, have been completely subdued by this new mode of treatment. Under its influence, the diseased organs have been seen to resume their normal energy, and the functions return to that regularity and that harmony which constitute perfect health.

Man is for ever engaged in endeavors to perfect science, but he often fails, even at the outset, by not choosing the right path. Too often, he will not wait for that wisdom which Time and Experience can alone give him: impatient to systematise, he neglects observation. The reveries of his imagination are taken for truths, upon which he bases his brilliant hypotheses, and seductive theories, which, in the end, prove more or less ephemeral, because they are not consequent with the laws of nature. Hence it is, that in all the sciences, and more particularly in Medicine, system has succeeded system, while none have been found to be durable, save those which have been founded on the laws to which we allude. A method of treatment rigorously in accordance with these laws, can alone offer the elements of lasting existence; such an one is alone worthy to fix public attention, and of this character will be found that, which it is my intention in this work, to make known and explain.

A total stranger to the sciences of the schools, and listening only to the inspirations of his own observant mind, Priessnitz was led to the adoption of this new remedial agent, by the salutary effects he had experienced in his own person, and which he had witnessed amongst his own kindred. Fortunate in his first at-

tempts, he was soon enabled to accomplish numerous cures, and restore to health, sufferers who had hitherto implored the succour of Medicine in vain. Calumny, distrust, and the cold contempt of scientific pride, successively gave way before facts; justice the most complete, was at length done to this plain and unsophisticated observer; and the most eminent Physicians have not disdained to imitate his practice upon which they have based their theories. In short, numerous and extensive establishments now exist, formed upon the plan of the institution of which he was the founder.

In the following pages, I shall endeavor to prove that I have not gone too far in asserting that, Priessnitz's mode of treatment reposes on that immoveable basis, which will fully secure to it, its true position in science. A minute examination of the principles on which it rests, with the proofs we already possess of its remarkable efficacy, induces the belief, that the future will still enlarge the circle of diseases, curable by its application. Experience alone can satisfy us on this point, the system being of too recent an origin, and the facts accumulated, too limited in number, to enable us accurately to define the full scope of its influence, and the extent of its powers. In the interim, as a medical man, I deem it a sacred duty I owe to science, to make known



within the circle of my immediate action, the results obtained by the originator of this mode of treatment, as well as those of my own experience, adding thereto those of the most eminent practitioners in Germany. The testimony of the last cannot be questioned, since amongst them will be found the names of men, whose reputation in Europe stands exalted alike for integrity and learning.

I am far from entertaining the belief, that implicit faith will be placed in my declarations. This new system will doubtless have to encounter numerous and powerful adversaries. Many there are who, dreading the tedious and painful task of personal investigation, will reject it without enquiry; but others, I am disposed to think, will be more reasonable and just, and before they decide, will give it the benefit of a fair and impartial, though a rigid examination. Ambitious to obtain the suffrages of the latter, it is to them I would particularly address myself—claiming that indulgence, which is always the legitimate due of a stranger, writing in a language which is not his own, and whose chief desire is to place his work, within the reach and comprehension of every unprejudiced and enlightened mind.

INTRODUCTION.

My object, in the present work, is to promulgate to the community, a new method of medical treatment, the only active agent of which is the vital force inherent in the organization; and to demonstrate, that we have it fully in our power, to excite and direct that force. Before proceeding further, I deem it incumbent on me, to make a few observations on vital action; on health, and its antagonistic principle, disease; on the reaction of the system in this last state; and, in conclusion, on the extinction of vital action—death. In these details, there is of course, nothing new: they are introduced with a view to simplify, and render intelligible, subsequent researches. They are mysteries only to the unprofessional reader, and they are recapitulated here, because these pages are not written for the exclusive perusal of medical men.

Wherever life is found, we observe matter united to a secret power, generally termed *vital force*, or *vitality*. This union is indispensable to the manifestation of every

kind of vital action. Matter, then, is as necessary to vital force, as the latter is essential to matter; for, separated, the one becomes inert, the other cannot manifest itself.

Matter, linked to vitality and shaped into organs, is the instrument employed by Nature to produce phenomena, the aggregate of which constitutes life. *Life, then, is the consequence of the union of vitality with organized matter; an union which may also be termed, living organism.*

As soon as the phenomena of existence begin to be manifested, it is perceived that they are circumscribed by certain limits, the object of their legitimate action being the preservation of the individual. Organization, under the influence of vital force, assimilates the nutritive matter which it draws from nature, by changing it to its own substance, and rejecting the residue of such assimilation. On the other hand, it is engaged in perpetual conflict with external agents, which constantly tend to destroy it, or to subdue it to their own laws. Furnished with numerous organs, which, however different in function, concur harmoniously to the same end, we perceive the vital principle successfully maintain the constant struggle. Thus, for instance, the surface, which is especially destined to come in contact with the bodies which surround us, is abundantly provided with nerves, which immediately transmit exter-

nal impressions to the nervous centre, and awaken the conservative instincts.

Some of the functions, respiration for example, are of such paramount importance, that interruption, but for a comparatively minute period of time, would produce great tumult in the organization, and might even occasion cessation of life. These functions are exercised involuntarily: Nature, ever provident, having wisely ordained, that they should not be subject to our control. In order that the economy of the system should not be deranged, an equilibrium of the organs and their functions must be maintained. *The perfect harmony of the whole constitutes health.* The idea of disease is a necessary corollary to this proposition, viz: *a manifestation of the derangement of that equilibrium, from which results health.*

But life is not indifferent to the peril by which it is menaced. We have already said, that an essential condition of the living organization is, its attribute of resistance to all causes of destruction. The conservative activity is proportionate to the danger—the greater and more imminent the latter, the more powerful is the former. Partial, and of little intensity, in slight local affections, etc., it becomes general, when the whole economy is threatened, as in inflammatory fevers, or where an important organ is seriously attacked. *These*

definitions furnish the ideas of local and general disease.

The derangements produced by disease are various, and Nature, in her efforts at resistance, may exhibit herself under three different aspects.

1st. The morbigenous agent, in general, excites the functions in too energetic a manner, (this is what usually occurs in Acute Diseases,) it produces an exaltation of vitality, incompatible with life, which is at length extinguished, if the exaltation continue too long.

2d. There results from the action of this morbigenous power, so great a depression or debility of the vital force, that existence is terminated from exhaustion, as in Scurvy.

3d. The functional equilibrium is more or less disturbed, in proportion as the disorder, resulting from a defect in the harmony, increases or diminishes, more than comports with the normal condition of the system. Hence arise irregularities in the functions, at variance with the end of the conservative principle, (such are the diseases occasioned by disordered Innervation.)

Death, that annihilation of the vital functions, is like disease, either local or general. It may proceed from a double cause. At one time, the organism, or system, assailed by an overpowering deleterious agent, (as for example, a violent Poison,) yields to the shock, and life is destroyed, either in some of its instruments, or in all,

according as the action of the deleterious agent is limited, or extends over the entire economy. At other times, the organs lack nutritive matter, necessary for their support, and this privation occasions general or partial death, according to circumstances; the former is produced when all the organs experience its influence, (as in Total Abstinence,) the latter, when it is confined to a particular spot, (as in a Limb where circulation has been interrupted, by the application of a ligature to its blood vessels.) But from whatever cause death may proceed, no sooner does the vital principle, in abandoning its connexion with matter, cease to protect it from the action of physical laws, than it instantly yields to their influence, and decomposition ensues.

To complete the outline of the remedial action of Nature, nothing now remains but to explain the means she employs to attain her end. They are as various as the morbid influences themselves, according to the part on which they operate,—whether on a particular organ, or on the whole system. This difference leads us to distinguish between the local and general medicative efforts of Nature. (Fever is a faithful image of the latter.) That I may make myself better understood, I will direct the attention of the reader, to the nascent appearances of Febrile, or Acute disorders in general. The first symptom observable, within a longer or

shorter period after the commencement of morbid action, is a temporary diminution of the vital energy. The body is affected by general horripilation; the surface becomes pallid and cold; the eyes are deprived of their usual lustre; the features contract; and the volume of the body shrinks so much, that the clothes which before fitted so tight, are now loose and baggy, and the rings, even, sometimes drop from the attenuated fingers. The pulse is small, rapid and feeble, whilst life seems to have abandoned the periphery, and fled to the centre with the blood.

This concentration of vitality, however, cannot continue long, without being quickly followed by a beneficial reaction, whence results a condition precisely opposite to that just described. The pulse, while it remains frequent, resumes its force and fullness,—a proof of accelerated circulation. The eye becomes animated the skin more and more glowing, and the heat gradually increasing, terminates in a copious perspiration, whose effects induce a general mitigation of febrile symptoms.

These reactionary phenomena, which, in the incipient stage, exhibit a struggle between the conservative principle, and that which tends to its destruction, decide which of the two will triumph. The former can only overcome the latter, when the aggregate of the vital forces which produce reaction, is sufficient to arrest mor-

bid changes, and cause their products to be eliminated. This elimination, which is called the *Crisis*, may be effected by the urinary system, by intestinal evacuations, by sanguineous exudations, or what is more frequent, by cutaneous perspiration. Whatever may be the mode selected by Nature, the morbid matter, eliminated by the crisis, is impressed with the stamp of the disease, and announces its close. This redundant vital activity, where the plasticity of the blood is augmented, where the generation of caloric, and the change of matter, are rapidly manifested, is called *febrile exacerbation*, or simply *FEVER*; and thus, by this process, Nature effects the restoration of the functions to their normal condition. This important faculty, or as it may be termed necessity, has not escaped the attention of observant Physicians. It is a fact, long known to them, that Acute or Febrile maladies, generally cure themselves, and that, as a mere spectator of the efforts made by the organism, to expel the morbid principle, the judicious practitioner should never interpose, except for the purpose of regulating them, or keeping up their due degree of safe action. Art should therefore be directed to *imitate Nature*, and be made to produce the phenomena of febrile reaction, by increasing the tone of the organs, in those diseases which have prostrated the vital powers.

In these disorders, the issue is various. The morbid

influence is occasionally too powerful to be overcome,—too rapidly destructive to be arrested,—the organic lesions produced, are too considerable to be repaired. Life is immediately extinguished, as in individuals struck by Lightning, or is worn away by useless efforts, which exhaust the powers more or less rapidly—(as in the Hectic Fever of Pulmonary Consumption.)

A perfect analogy exists between general and local reaction. A single example will demonstrate the truth of this proposition. Let us suppose that a wound has been received in some part of the body, no matter where. The injured part soon becomes the seat of pain, more or less intense, accompanied by augmented heat; a considerable afflux of humours; tumefaction, more or less evident; in short, we observe locally, all the symptoms which accompany a general reaction. Here again, as in the preceding illustration, the development of these phenomena will only lead to the repairing of the injury inflicted by the assailing cause, in the degree in which the repairing power predominates over this cause; for, if, in the struggle, the latter (the assailing cause) prove the stronger, gangrene takes place, and local death supervenes. But if the curative force of Nature is so potent, what need have we of physicians and medicaments? How is it that innumerable maladies are continually consigning mankind to premature graves? It is

easy to answer these questions. The manner in which we live is not quite in conformity with the dictates of Nature: we have created for ourselves a thousand artificial wants, the gratification of which enervates the system, and disturbs the harmony of its functions. The refinements of civilization have rendered us deaf to the impulses of the conservative instinct; impulses, which the savage, the child, and the unreasoning animal, obey to their manifestly great advantage. Hence it is, that our health ceases to be a positive, but a relative benefit. The deterioration of our organs, not permitting our functions to operate with that energy and harmony, with which Nature has originally endowed them, their reaction is found insufficient, in cases of serious injury. Hence arises that crowd of maladies which surround us, for the cure of which, Man has run the circle of Art, to seek the means of restoring to the enfeebled organization, the force which it has lost. Such is the origin of the healing art, an art almost coeval with the human race, for from the earliest periods, Man has been a suffering creature, the heir to innumerable ills.

But this art to be useful must imitate Nature; her indications alone are infallible, and we can only hope to succeed when we are treading in her path. Yet the authors of the various systems of medicine, have wandered widely therefrom, and have thus failed in their

object, while Hydropathy must succeed, because it has Truth and Nature for its guides.

Let us take a glance for a few moments, at the modes of medical treatment, adopted in the different systems in vogue.

Alloopathy proposes the cure of disease, by remedies which excite phenomena, diametrically opposite to those of the malady they are meant to remove. "*Contraria contrariis curantur*:" such is its motto. But does the Allopathic physician always attain his object? Does it not often happen that he goes beyond his mark, and inflicts serious injury where he intends unmixed good? Do we not witness every day the use of mercury, quinquina, iodine, phlebotomy, and a host of other remedies, that are considered most efficacious, even when administered with the greatest circumspection, followed not only without the least benefit, but positively with very injurious consequences. When these medical agents are used without due discrimination, how fearful are their ravages in the animal economy—human nature occasionally suffering irreparable injuries! One very important advantage for Hydropathy is, that its cures are always radical. How many cases of mere temporary relief do we observe as the sole fruits of other modes of treatment! The drugs taken into the system, but too often act as brief palliatives, producing an apparent cure,

while the morbid principle is not eliminated, and lurks securely in the system, only awaiting favourable circumstances to renew its devastations. Thus, in illustration we will quote but a single example ; diseases which under mercurial treatment, have been apparently cured for years, have reappeared in all their frightful symptoms, under the influence of sulphurous baths.

The observant and judicious student of nature will only judge of the effects he is seeking to produce by their causes : before his scrutinizing mind can be satisfied, they must bear a clear and undoubted relation, one to another ; the more powerful are the latter, the more distinct and marked will be the former, and vice versa. This simple axiom has proved a stumbling block to homeopathic physicians. The truth of the basis of their doctrine, "*Similia similibus curantur*," has never yet been proved. He who would found a system of medicine ought never to forget, that the cure of disease has its birth in the organization itself, and that to establish its truth, his method must be to reproduce faithfully the operations of nature. It must, in fact, by awakening vital activity, cause the disordered system to develop a series of conservative efforts, of an intensity commensurate with the morbid state, from which will necessarily result the cessation of the latter, and the complete re-establishment of health.

HISTORICAL SKETCH OF HYDROPATHY.

FIRST PERIOD.

THE application of water as a curative means is not new in medicine, but the numerous and important services it has rendered, in consequence of essential modifications, which it has undergone in more recent times, place it in the present day, amongst the most efficient therapeutic agents.

A rapid glance at the past will show us the various successive changes the application of this remedy has undergone, to the period in which we live. On examining the Bible, we find that cold baths were prescribed for a number of endemic disorders (leprosy for example). Amongst the Jews, it was a sacred duty enjoined on the women, to purify themselves by ablutions in the stream, after lochial, menstrual, and blenorrhagic discharges. Pythagoras, who had learned amongst the Egyptians

the salutary influence of cold baths, recommended them to the Greeks. The Spartans were habituated to them from infancy, and it is to their example the Macedonians owe the adoption of the same healthy custom. The hardy tribes of ancient Germany, according to the testimony of Cesar and Tacitus, were indebted for their herculean strength, to the frequent use of cold bathing, in which they indulged even in the depth of winter.

HIPPOCRATES employed cold water in the treatment of fevers, rheumatisms, ulcers, erysipelas, arthritic affections, hemorrhages, tympanitis, etc. ERASISTRATUS prescribed it in inflammations of the brain. CELSUS made it an important article of diet, using it in the treatment of lethargy, epilepsy, insanity and gout: in designating the physician CASSIUS, he calls him, "*ingeniosissimum seculi nostri medicum*," because the latter cured by means of cold water, weakness of the chest, cholera and dropsy. MUSA, a celebrated practitioner in the time of Augustus, cured the Emperor of an intestinal engorgement of the abdomen, accompanied by symptoms of consumption. This physician became so famous by the introduction of cold baths as a therapeutic agent, that statues were erected to commemorate him. AGATINOS of Sparta, A. D. 80, strongly recommended the medical application of cold water. ASCLEPIADES speaks of it principally in reference to nervous complaints, and GALEN

thought it highly advantageous in the treatment of nervous and hectic fever, and in bilious colic. ORIBASIUS, physician to the Emperor Justinian, A. D. 450, uses this remarkable language, in speaking of cold water, "*Qui autem hunc brevem vitæ cursum sane cupiunt transigere, frigida lavare debent. Vix enim satis exsequi possum, quantum utilitatis ex frigida lavatione percipiatur.*" (Coll. liv. x, cap. 7). Toward the middle ages, simple and rational modes of medical treatment were forgotten or superseded, amidst the complicated forms, and the numerous compounds of pharmaceutical agents. The Arabian physicians, however, who alone at this epoch, exercised the healing art on wise and scientific principles, remained faithful to the cold water system. Among them, we may cite AVICENNA, A. D. 1036, and RHAZES, A. D. 923, who successfully combatted ardent fever, and small pox, by means of cold water.

At a later period, history reveals to us the names of many enlightened characters, who bore high testimony to the curative virtues of cold water. MICHELE SAVANAROLA of Padua, A. D. 1462, strongly recommended cold affusions in gout, weakness of the eyes, and uterine hemorrhages. CARDANUS of Pavia, A. D. 1575, complains in forcible terms, of the negligence of the medical men of his time, who were too indifferent to the use of cold water, in arthritic or gouty affections. VAN DER

HEYDEN, of Ghent, A. D. 1524, records an epidemic dysentery, in the subduing of which, cold water proved highly efficacious. SHORT, an English practitioner, A. D. 1656, lauds its specific virtues in the cure of dropsy, and hydrophobia. Maximilian I., Emperor of Germany, when ill of a typhoid fever, and reduced to the last extremity, after having vainly resorted to tonics, and other stimulants, was saved by cold water, which he drank secretly and in great abundance.

SECOND PERIOD.

It was not, however, until the last century, that in England, Italy, France and Germany, physicians of eminence began to direct attention to the advantages which cold water presents to the healing art, in the various modifications to which they have subjected this fluid.

Among the English, FLOYER published between 1702 and 1722, six editions of his *PSYCHLORUSIA*. The work of Dr. HANCOCKE, in which he treats of water, as being the best remedy against plague and fever, reached its seventh edition in the latter year, 1722. It will be sufficient for me, in this place, to quote the names of *LUCAS HUXHAM*, *MASSONGOOD*, *FALCON*, *SHAW*, *JACKSON*, *LODGE*, *CRATES*, *POPPE* and *WRIGHT*, the last of whom

successfully treated malignant fevers, by cold water affusions. But the celebrated CURRIE, whose work appeared in 1797, contributed the most to incite the medical world, to the use of cold water, as a remedy against typhus fever, putrid fever, scarlatina, etc., etc. The Italians were not behind the English in their praise of this agent. We particularly distinguish amongst others FONDARO, MONETTA, ROGNETTA, and, above all, Father BERNARDO MARIA DI CASTRAGIONE, who between the years 1724 and 1725 effected a number of very astonishing cures at Malta. He employed cold water chiefly in petechial fevers, eruptions, and different other febrile diseases. He was closely followed herein, by CIRILLO, an eminent Neapolitan physician, who by the use of cold water, had cured himself of an inveterate hypochondria. We may add to these names, those of BLONDI, PALAZZO, SANCASSONI, BENEVOLI, CALDANI, and other eminent practitioners.

The French physicians who are the most conspicuous as advocates of the cold water system, are GEOFFROY, PERCY, NOGUEZ, JOUBERT, MARTEL, LAMORIE, CHIRAC, LOMBARD, LARREY, TISSOT, and of later date TANCHOU.

At the head of the German members of the Faculty who have written on this subject, I shall unhesitatingly place the name of the illustrious HOFFMAN, who made, about the close of the last century, a number of interest-

ing and successful experiments, upon the curative properties of cold water.

In the vast number of those who followed in his footsteps, those most remarkable are HUBERTUS, HEGGER, the HAHNS, father and son, FRÖHLICH, KOLBANY, the HARDERS, uncle and nephew (the former of whom had saved his child's life when seriously threatened by croup, through the application of cold water) MYLIUS, REUSS, PITSCHAFT, BRANDIS, HEGEWITSCH, STIEGLITZ, VAN SWIETEN, FERRO, PFEIFER, DZONDI, WEDEKIND, ACKERMANN, MÜLLER, MARCUS, LOBELSTEIN-LÖBEL, OSIANDER, and the two Coryphei, or Chiefs of the modern German School of Medicine, HUFELAND and FRANK. Among surgeons, we may cite THEDEN, SCHMUCKER, ZELLER and KERN, who employed it exclusively, in cases of contusion, wounds, hemorrhages, burns, etc.

THIRD PERIOD.

To this time, the annals of medical science, offered nothing but isolated facts on the therapeutical properties of cold water. No one had hitherto thought of collecting, collating, and analyzing these facts, so as to deduce from them the materials necessary to form a regular system. No one had perceived that the use of cold

water, established on the broad basis of a sound theory, might overcome a host of diseases, which had obstinately resisted all ordinary treatment, and might give birth to a system, boundless in its resources, and rich even to profusion in its elements of success. It was not yet known that the employment of this remedy would revive the energy of organs, long exhausted by continued suffering, often induced by the very medicaments applied to restore them. *In effect, the world was perfectly ignorant of the fact that the application of cold water might be rendered far more efficacious, by causing it to be preceded by characteristic perspiration—a combination as wise, as it is useful.* While I reserve to myself the care and duty of speaking hereafter, at greater length, on this important, and very essential modification of the use of cold water ; viz, that in reference to its connection with perspiration, I shall take an opportunity of anticipating my remarks, by recording in this place, that it is to PRIESSNITZ (who first originated the combination,) belongs all the honour of discovering this method of subduing a variety of diseases, until his time regarded as wholly intractable, or at least of the greatest possible difficulty to cure.

I shall indicate in the course of this work, the diseases most easily overcome by the hydropathic system, and the relation existing between the malady and its cure. For the present, I think it apposite to furnish a few de-

tails, concerning the location selected by Priessnitz for his establishment, which has served as a model for a great number of similar institutions, now existing in Germany and elsewhere.

On the summit of a lofty mountain, one of the chain of the Sudetes, in Austrian Silesia, near the frontiers of Prussia, Priessnitz made his first experiments, and in that secluded spot, his assistance was sought by hundreds of persons afflicted with disease. He received them amid the recesses of a gloomy forest, and there undertook their cure, without any other auxiliaries than pure air, water gushing from the rock, and that peculiar and extraordinary talent, which knows how to modify, and adapt to the case of each individual, in a manner varied almost to infinity, a method of treatment which is in appearance so simple and uniform. Vain indeed would be the attempt to obtain from him an explanation of his theory, or the principles on which it is founded. However active and energetic may be his ideas hereon, he is unable to express them, and it is only by closely observing him, and noting his actions, that we discover him following the strict laws of Natural Philosophy and Physiology, sciences whose very names are to him unknown.

Scattered over the desert spot chosen by Priessnitz as

the scene of his experiments, may be seen a few peasants' cottages, amongst which lies his own dwelling undistinguished by any feature to announce it superior to the rest. In the midst of these, are two larger buildings, constructed principally of wood, destined to receive those who seek his aid. His patients are very narrowly lodged, and constrained to do without many of the usual comforts of life; but, far from being deterred by these inconveniences, all are sustained and encouraged by the hope of returning health. Many remain there during the whole of the winter, which is extremely severe in this mountainous region, where even in the month of August, the thermometer at sunrise indicates but 6 to 7 degrees Reaumur. Priessnitz however believes that the lower the temperature of the water, the more beneficial are its effects, and the treatment when once commenced, cannot be interrupted, without extreme prejudice to the patient's health.

I shall close this slight historical sketch by expressing my ardent desire that the physicians of this country will soon recognize the efficacy, and adopt the practice of this new and invaluable modification in the healing art.

DEFINITION AND OBJECT OF HYDROPATHIC TREATMENT.

The object of this mode of treatment is to arouse and regulate, without the aid of medicaments, the healing powers innate in the organization, so as to effect the removal of disease. The external application of cold water; its internal administration; perspiration, effected by accumulation of organic heat round the body; diet; appropriate regimen—these are the only means it prescribes to arrive at this desirable end.

I have already stated, and it is well to recall attention to it, that the organic derangement which constitutes disease, arises sometimes from too great an exaltation of vital activity; at other times from a prostration of the same principle, and finally, from functional irregularities of various kinds and degrees. These different morbid conditions, when removed, may leave behind them certain abnormal products, which the economy in vain endeavours to cast off. At first they are latent, and exercise no obnoxious influence, but in time they usually become the fruitful source of new and serious disorders. The pathological conditions, before enumerated require as many hydropathic modifications, each adapted to the specific complaint. Thus we perceive, that this mode of treatment properly directed, reduces the exalted and self consuming vitality, stimulates the powers to the due degree of appropriate action, when they are insufficient, removes the obstacle which depresses them, re-

establishes the harmony where it has ceased to exist, dislodges from the economy the morbid matter and abnormal products which fatigue it, *and in short, restores to the organization, by means of its own activity, a gradual and increasing energy.*

General remarks upon water; the extent of its employment; the necessity of its cooperation with every thing that exist; its influence upon life, as we learn from chemical analysis.

Before I speak of the effects of cold water on the organization, I shall make a few general observations on its use, and the office it performs—an office so important, that it would seem as if nature had sought by it to inform us, of the immense utility of a substance, which has so great an affinity to the elements that constitute our being.

Water is one of the inseparable attributes of life. It is indispensable both to organic and inorganic Nature. If, for example, we deprive the chrysalis of its water of crystallization, it instantly loses its form and crumbles to dust.

But it is particularly in the organic kingdom, that water displays its wondrous power, its all pervading influence. Through it, the plant springs from the earth,

is nourished and fully developed. The source of life itself, we behold the vivifying principle revealing itself in its own pellucid bosom—in those animalculæ whose expressive designation “infusory,” fully attests their origin, and proclaims the generating fluid, as indispensable for their production and preservation.

In ascending the scale of organic life, from the simple entozoary to the finest and most complicated organization, we discover at each step of our progress the influence of this fluid. It assists in giving birth to the embryo; it surrounds it, during its progressive growth, to protect it from injury, and in the opinion of many of the most celebrated physiologists, it nourishes the infant seed until the moment arrives when sufficiently developed, it separates itself from the object in whose bosom it first received existence.

Whatever may be our period of life, water never ceases being an element of our nature. It constitutes the base, and vehicle of our fluids; it penetrates with the latter to our inmost parts, conferring on each and all, that suppleness and elasticity necessary to the due discharge of all their functions.

In a word, this fluid widely diffused throughout Nature, in almost boundless profusion, is one of the primary conditions of life, and, according to some geologists, it is the generative element of our globe. It surrounds, pe-

netrates and vivifies the entire mass; it floats above it in clouds and vapours, to fall again upon its surface in fructifying showers.

Chemical analysis beautifully exhibits new proofs of the predominant influence of this liquid. It is found to be composed of several elementary principles, one of which, oxygen, is so necessary to the maintenance of life, that the most powerfully organized body cannot dispense with it. It is oxygen which concurs so powerfully towards the all important act of respiration. By penetrating the lungs, it deprives the black blood of its carbon, changes its colour to red, and thus renders it fit for the purpose of nutrition. The influence of oxygen, however, is most powerfully demonstrated in the process of combustion, a phenomenon which so closely resembles the glowing state of life.

The second element which enters into the composition of water is hydrogen, a principle diametrically opposite to that of oxygen. If in the former, we find the stimulating power *par excellence*, which we may well call, the very essence of life; in the other, we discover that element which is, above all, the best adapted to qualify matter. Thus we detect it wherever nutrition has accumulated its materials (as in fat or adipose substances for example,) and to resume the analogy between life and combustion, which was instituted in a preceding

paragraph, it is hydrogen which in the latter burns with the greatest intensity.

Finally, chemical analysis demonstrates in water the presence of a third principle,—carbonic acid, which, although it cannot be considered as an integral element of water, is always found in union with that liquid, when it is examined immediately after its escape from the earth. Carbonic acid imparts to water its digestive, stimulating, and refreshing qualities, of which I shall speak in greater detail, when I come to treat of the external and internal application of this fluid.

Several circumstances induce the belief, that the degree of coldness in water, is in proportion to the quantity of carbonic acid which it contains. This idea derives plausibility from the fact, that among the gases, carbonic acid is the only one which admits of being rendered solid, and has the power of freezing mercury on returning to its gaseous state.

ON THE ACTION OF COLD WATER ON THE LIVING ORGANIZATION.

FIRST MODE OF ACTION.

Cold water acts on the living organization by the laws of contrast, as a calorific and tonic ; or, to speak more clearly, its first impression is a sensation of cold and prostration, quickly succeeded by a feeling of heat and energy.

It is a well known fact in natural philosophy, that

when two bodies of unequal temperature are placed in contact, the warmer body yields a portion of its caloric to the colder, until the temperature of both is the same. But this law when applied to organized bodies, only prevails during the first moments of contact. There is another law of the animal economy, which counterbalances the first, and which gives to every being the faculty of generating heat within itself, so as always to preserve that degree of temperature belonging to its organization. But the too rapid production of caloric fatigues and exhausts the economy, and hence result the sufferings consequent on the abstraction of heat.

The phenomena we have been describing, are visible in a healthy man when he takes a cold bath. How uncomfortable are his first sensations on entering the water ! All his members are seized by an universal tremor, the surface is overspread with an unusual pallor, and a general crispation is felt throughout ; his features contract ; the volume of his body diminishes sensibly ; the blood, driven from the periphery, flows toward the brain, the heart, the lungs, and the abdominal viscera ; congestion follows, and occasions a sensation of restraint and oppression in the play of the organs. These results are evidently the consequences of the abstraction of heat by the cold water. The rapidity of this abstraction will depend upon the capacity for heat of the medium in

which the body is plunged. Thus a bath at 15 degrees Reaumur, seems cold to us, whilst the air, at the same temperature, feels sufficiently warm.

To return, however, to the effects of cold on the body. We perceive that the double property which it possesses of abstracting heat, and of producing an internal concentration of the fluids, by driving the blood from the surface, explains the phenomena of the diminished volume of the body and its pallor; and we also find the cause of congestion in this concentration, which by gorging the organs with blood, interrupts the free performance of their functions.

But this apparent disorder, this embarrassment of the functions is only momentary. The sedative effects of a cold bath are soon followed, in conformity with the laws of reaction, by an excitement—an increased activity—a renewal of strength—which compelling the fluids to resume their usual course, propels them toward the periphery: at the same time, the nervous system is invigorated, and its reaction, uniting with the increased circulation, serves to effect a reproduction of caloric, and a restoration of the equilibrium. These efforts of the system produce rapidly the most wholesome changes. The warmth of the skin denotes an increase of caloric; an indescribable sensation of comfort is experienced; the strength is augmented; in a word, all the functions are

discharged with marked regularity and fresh energy. These phenomena, which do not accrue from the administering of stimulating medicines, but solely from the working of the vital power, are strongly impressed with the character of stability, derived from the source whence they have emanated, *for the productions of nature ever exhibit a certain impress of durability.* Her most efficient agent cold water, at the first contact, augments cohesion by its astringent property, and thus tends to fortify the organs, and to impart to them that degree of tone which it is so necessary for them to possess. *Hence its tonic power.*

I must not pass over in silence another important effect of cold water on the system, quite analogous to that which I have just described. Cold water, by abstracting caloric from the body, disengages from the latter at the same time, in an equal proportion, its electricity; whilst the system reinvigorated by this diminution, is placed in a condition to repair its loss with still greater intensity.

Similar results will be obtained by employing cold water in the form of drinks, injections, douches, and fomentations. In these different applications, it is from the primary and secondary action of this liquid, that are derived those beneficial effects which we call tonic.

SECOND MODE OF ACTION.

Cold water acts by revulsion, in destroying the excess of vitality, after having diverted it from the part attacked.

SYMPATHETIC relations subsist amongst all the organs, and often act as means of union. It is by the mediation of these bonds that the brain, for example, reacts upon the stomach; the mammæ upon the uterus; in short, that they mutually inform each other of their respective conditions. If, taking advantage of this reciprocal influence of the organs, one upon another, we reflect on the tonic and stimulating action of cold water, it is easy to understand how this action when exerted on one of our organs, will affect another with which it may be sympathetically related. This application of water thus modified, presents to us the most precious resources, which judiciously employed, are susceptible of producing the most salutary results.

THIRD MODE OF ACTION.

Cold water acts by the carbonic acid which it contains.

I am now speaking of *spring water*, or water which is obtained immediately after its escape from the earth; water which flows on its surface being destitute of the powerful agent in question.

The proper employment of cold water, possessing the

qualities we have above indicated, produces a healthy excitation of the gastric centre. This excitation is propagated by means of its contiguity to the rest of the digestive apparatus, and by sympathy to the other organs. Hence arises a greater activity of all the functions, whose regularity of operation leads to good nutrition, and, as a natural consequence, to a healthier state of the system.

Employed externally, as in the bath, its effects are strictly analogous with those of the preceding. If we consider the vast importance of the skin in the animal economy, we perceive that the condition of this envelope, must exercise a great influence on the rest of the organism. As this influence occupies an important part in the hydropathic mode of treatment, and as I shall have to speak of it hereafter in minute detail, I will limit myself here to this single remark, that the carbonic acid contained in water, is one of the most suitable agents in nature, to develop all the various species of excitement of the cutaneous system.

FOURTH MODE OF ACTION.

Water in its character as a fluid acts by inhibition and absorption.

The effects of cold water are as sure as they are prompt, inasmuch as it penetrates the tissues of our

body with amazing rapidity. Solid medicaments, before they be assimilated, must be dissolved. Water, on the contrary, however, it is administered, whether as a beverage, as an injection, or in any other shape, is no sooner presented to the mouths of the absorbent vessels, than it is taken up and carried into the system, where it is mingled with the lymph, and the sanguineous circulating torrent. This facility of penetration gives to water the dissolving power, by which it attenuates our denser humours, and facilitates their circulation. It is by the influence of this property, that the most obstinate visceral engorgements are softened, and made to yield to absorption, which is accomplished with an intensity proportionate to the energy of the other functions; and indeed, from the same cause, the activity of the secretions and excretions is redoubled, leading to those desirable and advantageous crises, on which it is my intention to discourse in a future part of this work.

One fact connected with the use of cold water, establishes beyond a doubt its extraordinary quality of penetration. Every one, I presume, is aware that the bath has the peculiar property of quenching thirst, and increasing the secretion of urine; these circumstances prove satisfactorily, that a certain quantity of water has passed from the surface into the system.

I shall reserve for that portion of this treatise, which

comes under the head of cutaneous crises, the remarks I purpose making on the double virtue possessed by cold water: viz, that of stimulating the integuments during absorption, and the other of its powers of co-operation, in producing the most important crises in morbid affections.

OF THE AUXILIARY MEANS IN THE HYDROPATHIC TREATMENT.

OF PERSPIRATION.

A NUMBER of powerful reasons demonstrate the efficacy of the curative power of perspiration, to which we have recourse in a great variety of cases.

In making the skin an organ of secretion, we imitate Nature, by whom it is frequently chosen as the medium through which she discharges the morbid matter from the system. In how many instances do we observe the noxious substances, flowing away in abundant perspiration, from the widely distended pores of the cutaneous envelope! Nor is this observation at all hypothetical, for every disease imparts its characteristic qualities to the sweat, which are readily discoverable to the smell and touch. Thus there is a marked difference between the perspiratory odor of a gouty subject, and that of an individual attacked by scarlet fever.

Perspiration, however, by itself does not always con-

stitute the crisis. When a deeply rooted disorder obstructs the free performance of the functions, there is in the first place a formation of imperfect products, the natural and inevitable consequences of which must be, an alteration or deterioration of the humours, and a vicious nutrition. It is then, that by exciting the vital activity to a proper degree, we observe it directing all its efforts towards effecting the removal of the obstacles, which, by preventing the re-establishment of the equilibrium, maintain the disease in force. Here again the surface becomes the medium of elimination, and numerous abscesses, ulcers, and cutaneous eruptions make their appearance. These phenomena, which I may as well here mention, are the daily results of the Hydropathic treatment, are specially observable in maladies occasioned by some *dyscrasy*, or a vitiated material state of the fluids, as in Gout, Syphilis and Scrofula. These results triumphantly prove the high excellence of our mode of treatment; for they produce a crisis in the disease, which is invariably followed by an amelioration of the patient's condition, which, daily increasing, soon leads to a radical cure.

Perspiration, which we endeavor to excite with the least possible degree of irritation, is of itself alone capable of diverting the excess of vitality from an internal organ, to an external one of less importance for the

moment. The cutaneous exhalations and the products which accompany it, by their abundant flow, carry off with them, the excess of caloric and electricity, the further discharge of which is again urged on by the cold bath to which the patient is immediately subjected.

Perspiration not only presents the advantage of preparing the surface, by exciting and dilating the pores, for the ready absorption of water, but produces a still more salutary effect, by directly provoking that absorption, through the necessity in which it places the organs, to repair the loss they have sustained, from the abstraction of vitiated fluids from the system. When the conditions of this absorption exist, there results from it the substitution of an exciting and vivifying fluid, whose nature sympathises with the juices of our own bodies. *This happy substitution, the ready effect of Hydropathic science, whose benign influence is becoming more and more marked and evident, will authorize us to say, with reason, that we have been enabled, by its means, to restore the most shattered and dilapidated constitutions, and that our patients leave us with bodies sound in every part, and perfectly free from the abnormal productions, which were either the cause or consequences of the disease.* I am, however, far from supposing that the skin is the only secretory organ through which a crisis is produced; for we are well aware that the surface does not always respond to our efforts, and that Na-

ture has provided other outlets for the escape of morbid matter. It must not be forgotten, that this mode of treatment enables the system to overcome disease by its own activity, and in a manner most conformable to Nature. For this reason, and because Nature, in order to effect a crisis, selects according to the idiosyncrasy and the affections, sometimes one outlet, sometimes another, it is the duty of the Physician to facilitate her chosen course, by acting principally upon the organs which sympathize with those by which the system seems to seek relief.—

But I have already remarked, in my general considerations on the action of cold water, it is a well established fact that the skin, either on account of its structure and its functions, or from its extent and its numerous sympathies, is the agent most frequently selected by Nature for the elimination of morbid matter; and experience clearly indicates to us that this is the organ which we ought, in most cases, to have recourse to, for the object of rendering it subservient to the purposes of artificial secretion.

Perspiration in our patients, hydropathically treated, may, from the means employed in producing it, and for the want of a better term, be called passive perspiration. We cause an abundant perspiration, without exciting sensible irritation in the sanguineous system, by very slightly stimulating the surface, the capillary vessels of which are filled and dilated with serous fluids. We en-

courage the accumulation and discharge of these fluids, by enveloping, hermetically as it were, the patient, so as to concentrate round him the heat disengaged from his body, at the same time carefully withdrawing all stimulants, whether external or internal. We allow him thus wrapped up, even the head being covered with cold compresses, to drink as much cold water as he pleases, for we know, that in such cases, cold water has the double effect of relieving the sufferer, and aiding, by the force of repulsion, the flow of the humors toward the surface of the body. Immediately after perspiration has begun, we introduce on him a current of air, which by a well known law in physics, increases the flow of the evaporation, by rapidly dissipating that which is already formed.

If the surface prove intractable, refusing to yield to the means above indicated, we have recourse to dry frictions, cold lotions, or to cloths wrung out in cold water, in which we wrap the patient, and thus, by one mode or another, never fail to induce abundant perspiration.

The lungs by this process are not heated, nor does it produce an excitement in the circulation which would prevent our submitting the patient, when in a high state of perspiration, to the effects of a cold bath, of from 50 to 60 deg. Farenheit. Particular care should be taken to apply cold fomentations to the head of those indi-

viduals, in whom, from peculiar circumstances or appearances, we may have reason to suspect that cephalic congestion would occur. Acting in this manner, we are enabled to expose the weakest and most delicate organization, to the sudden change of temperature, not only without the least fear, but with the greatest certainty of producing the most salutary effects. For the purpose of eliciting the phenomena I have just described, it is necessary to operate on the plan followed, with such signal success, in the large hydropathic establishments in Germany.

To prevent all contact with the external air, the patient, at about 4 or 5 o'clock in the morning, is closely wrapped to the chin, in a coarse woollen cover; after which a wrapper stuffed with down, or lined with cotton, or made of any substance, calculated to prevent the escape of caloric, envelopes the whole. In a short time, the accumulation of heat, disengaged from the patient's body, forms around him an atmosphere, which, in the majority of cases, excites perspiration more or less profuse. This phenomenon, which is so strongly influenced by the variations of the temperature of the surrounding air, is not less characterized by the peculiarity observed in each patient's constitution. The beds of some individuals are wet through in half an hour; others, subjected to the same operation, at the end of three or four

hours, hardly exhibit incipient perspiration. I have often noticed, for example, in gouty subjects, that the pores of the skin, at the seat of the disease, are the last to open, and that perspiration here invariably announced the commencement of a reaction, on which we might safely build the fondest hopes. In short, as we have already stated, when the skin is in such a state, as to render perspiration a subject of much difficulty, we employ dry frictions and cold lotions; and if it still remain intractable, we have recourse to the cold and wet sheets, in which we envelope the body. This treatment causes a secretion of fluids from the surface, almost incredible in point of quantity, the nature of whose different qualities the judicious practitioner will know well how to appreciate.

When the physician, who must in this case strictly observe the changing conditions of his patient, considers that he has sufficiently perspired, he will direct him to be placed, as quickly as possible, in a cold bath, prepared beforehand, and placed near his bed. The first impression of the bath which is always disagreeable, being once surmounted, the patient experiences a sensation of comfort, which is generally the prelude to a cure. The prospect of relief is much increased, when we observe the surface of the water, covered with a viscous and glutinous substance, formed of the particles of morbid matter

of which the system is thus cleansed by perspiration.— This important moment, when the patient is so suddenly submitted to the vivifying and exciting influence of water, by which we seek to substitute for morbid matter, the salutary principle, imperatively demands the presence and the discriminating supervision of the physician. The minutes which the sufferer passes in the bath should be scrupulously counted: the smallest delay may become dangerous. Thus certain patients must only remain a minute immersed; others may be safely left there until the second chill. For some who are delicate and endowed with great sensibility, we elevate the temperature of the water; and for others, on the contrary, we lower it as much as possible, these modifications being of the highest importance, as experience has abundantly proved.

On leaving the bath, the patient, after being well dried, resumes his dress, and immediately commences a brisk promenade, during which he must drink freely of cold water, avoiding, however, excess, of which he will receive timely notice by an uncomfortable sensation in the region of the stomach. Habit produces the most wonderful effects in regard to this subject. I have known some patients who, at the outset, were positively *hydrophobic*, to whom water was abhorrent, yet in the course of the treatment, they were accustomed to swallow

with avidity, twenty or thirty tumblers full a day. After the walk, breakfast is served, consisting of nourishing diet, whose quality is regulated according to the exigencies of the peculiar disease, and the digestive powers of the patient. Stimulating drinks, spiritous, vinous or malt liquors, are utterly proscribed, even in the most minute portions, and lightest natures. With respect to the quantity of food allowed, we must be governed by the state of the appetite, which becomes keener as the vital energy, or the power of assimilation, is invigorated. It is a subject of the highest pleasure to the physician, when he beholds the patient, literally devouring the aliments presented to him.

The interval until dinner time is occupied in various ways; but always in such a manner as to accelerate the cure. The state of the patient will of course prescribe the difference in his modes of action. Whilst those who have only just begun a course of hydropathic treatment, and are delicate and feeble, or in whose cases the malady is soon expected to be overcome, are employed in gymnastic exercises; others, who are of stronger constitutions, or in whom the disorder is chronic, and obstinate to remove, more painfully affected, are obliged to submit to different modifications of cold water, either in the shape of fine rain, or in that of the *douche*, a mode of application most powerfully efficacious, whose effects

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may be varied according to the height, from which it is directed on the body, the volume of the column of water, and the length of its duration. For some, we prescribe whole-baths, half-baths, sit-baths, and foot-baths, according to the derivative, or corroborative effects we wish to produce.

To explain the influence of these modifications, I will refer to the practical observations which I purpose making in the second part of this treatise. Those patients, whose dry and arid skin is dull to the functions which devolve on it, necessitate the use of frequent cold lotions, whilst others, who are only locally affected, find relief in fomentations, used, more or less, frequently. But, in general, it is necessary that all should use the greatest exercise possible, drinking, at the same time as much cold water, as their stomachs enable them to bear without fatigue.

In order to allow the patients more time to devote themselves to the curative processes of the water treatment, and to take repose, dinner ought to be served shortly after noon, and this meal is partaken of with as keen a relish as that of the morning.

The gouty, the syphilitic, those afflicted with chronic complaints, who have suffered for months and years, not only the tortures inseparable from their diseases, but those consequent on the administration of different drugs

which, by impairing their digestive functions, have deprived them of appetite;—those who have been accustomed to breathe the unwholesome atmosphere of a confined chamber,—are the first to experience the beneficial effects of a course of treatment, which, in affording them pure air and fresh water, the very elements of health, restores to them gradually their vital powers, whose return is announced by increasing appetite and better nutrition.

The afternoon is diversified by various occupations. As we are urgent in our directions for exercise and the abundant use of cold water internally, during the morning, to an equal degree are we particular in forbidding it to those under treatment, during the first few hours after dinner. Those, however, who are of obese size and full habits, are not kept within this restraint. Generally, at this period of the day, we act in such a manner, as without absolutely indulging in sleep, the patient may yet find a little relaxation and repose, for both body and mind. The first digestion being over, which ordinarily occupies about three hours, although we are very careful in noting the individual peculiarities which might modify its duration, we return to the therapeutic treatment of the morning. We of course refrain from submitting to it the weak and feebly organized, whose energies are unequal to the repetition, and those in whom an incipient crisis has re-

quired a temporary suspension of its use. There are, on the other hand, constitutions so hardy, as to admit of a renewal of the process of perspiration and the consecutive bath. A second application of the douche on the same day, seems to me to be too irritating, and I therefore constantly discourage it in all my patients, whom I recommend to renew their exercise, and the internal use of cold water. After a light supper they retire to rest, of which they are then in much need, and there recruit themselves to submit again on the morrow, to the exigencies of the hydropathic treatment.

Observations on the influence of Half-baths, Foot-baths, Fomentations, the Douche, The Wet Bandage, or Compress, and the Wet Sheet.

The means above enumerated will exercise a double influence; they will, in the first place, produce those general effects which characterize the application of cold water; and secondly, act specifically, according to the manner in which they are modified.

Half-baths have a powerfully derivative effect, when the vitality of the super-diaphragmatic organs is too exalted, as happens in cerebral congestions, certain kinds of head-aches, irritation of the eyes, epistaxis, and the spitting of blood, arising from violent afflux towards the lungs, etc. If, instead of the half-bath, where the lower

part of the body up to the navel is in the water, the seat only is immersed, the latter mode will be found very efficacious in remedying the functional irregularities of the abdominal viscera. I do not know a finer means for causing a flow of the hemorrhoids, for removing obstructions, and assuaging colics. etc. This mode of modifying the bath, from its peculiar tonic and stimulating quality rouses the uterus from a state of inertia, and relieves certain cases of amenorrhoea, and dysmenorrhoea. The same qualities are also of great service in diseases of the genital organs, where atony is the predominant characteristic, as, for example, in chronic discharges from the urethra, (involuntary seminal emissions.)

It is the same with *Foot-baths*. They are employed either as derivatives, or to combat directly local maladies; such as chilblains, and weakness of the lower extremities. But, incontrovertibly, it is in paroxysms of the gout, where their extraordinary effects are most readily appreciated.

Cold fomentations act as antiphlogistics, as solvents, and above all, as antispasmodics.

The antiphlogistic influence of cold fomentations is too well known to need much comment. We will simply advert to their employment by Surgeons, for the

purpose of dispersing certain tumors which are commonly known by the name of white swellings, lymphatic swellings, &c., &c. With respect to the great efficacy of cold fomentations in spasms, the author is able to furnish undoubted proofs of it himself. By the active use of this remedial agent, aided by strict regimen, he has removed spasmodic affections, which had for years resisted every other means. It appears that cold moisture, when for a considerable time in contact with the afflicted parts, exercises a most salutary influence, by abstracting their excess of heat and electricity. Hence, it is necessary that these fomentations should be renewed four or five times a day, sometimes allowing the cloths to become quite dry, and sometimes removing them when they have become sensibly warm. It happens frequently, that the parts of the body which are subjected to these fomentations, become the seat of continual and profuse perspiration, and even of an erysipelatous eruption which is attended with decided relief.

Cold lotions are in their effects analogous to the cold bath. Though comparatively feeble, they have this advantage, that they may be employed locally with great effect in certain cases. Thus we apply them over the spinal column in nervous weakness, &c.

Cold injections are eminently useful whenever it becomes necessary to combat those atonic conditions of

the mucous system, which produces fluxes, more or less abundant, (mucous hemorrhoids, for instance.)

The *Douche*, from its powerful influence, occupies the first rank in the list of our curative agents. In this form of application, all the beneficial effects of cold water acquire their highest degree of efficacy. By exciting the almost extinguished vitality of our organs, it enables them to resume their functions, dissipates habitual languor, and imparts fresh energy to the whole system.—The vital heat which it generates in the part to which it is applied, quickly leads to an increase of strength. We ascribe its astonishing effects to the rapid influence of the action of the water, and to the continual percussion on the nerves of the diseased organs, the shock being immediately transmitted throughout the whole nervous system. Thus propagated, and rousing the whole organization, the percussion of the douche prevents the possibility of any morbid matter remaining hidden in the system, whilst the great excitement of vitality, whether throughout the whole body or only in the afflicted organ, brings about the expulsion of the noxious agent. The burning heat, the intense redness of the parts to which the douche has been applied, attest its power, which will be still more appreciated, if we pay due attention to the palpable and salutary crisis which it produces. The victim of Gout, whose stiffened fingers have been for

months swollen by disease, and racked with pain, no sooner submits them to the operation of the douche, than he feels his miseries diminish, and the articulations of the phalanges again resume their usual movements. The patient whose feeble state is the result of nervous exhaustion, will soon recover his strength by the application of the douche to the spinal column.

If, however, we pronounce the douche to be one of the most powerfully efficacious of the agents used in the water treatment, we must, on the other hand, admit that its very energy of action renders it also *dangerous in injudicious hands*. Thus, in cases where the propriety of its use is the most apparent, it would be unsafe to omit paying close attention to all the minutiae of its detail—the volume of the column, the height of its descent, the duration of each application, &c., &c. We may, then, well comprehend its deleterious effects when not absolutely required, and how much it will aggravate the disease which it is injudiciously called on to remove.

Water employed in the form of fine rain, may be considered only as a preliminary means: by increasing the size of the drops, its effects of course approach nearer those of the douche. It is employed in those diseases of delicate females, where general debility, accompanied by great sensibility, is the predominant symptom, and where the action of the douche would too powerfully

excite the energy of the nervous system. In chorea, or St. Vitus' dance, and in epilepsy, it has also been found to be highly efficacious.

The Wet Bandage, or Compress.

This application is of two kinds—one in which the wet linen, when applied, is left exposed to the air, producing a cold or a cooling sensation, by the free evaporation of the moisture which it contains,—renewing it frequently. The other, from which the water is more completely wrung out, must be carefully protected from the air by a covering of dry linen or oiled silk. This latter is a warm application, all free evaporation being prevented. When once heated by the skin, it remains at the temperature of the part to which it may have been applied.

The first of these, or the *cold fomentation*, is used when there exists active superficial inflammation. It reduces the heat, and diminishes the quantity of blood sent to the part affected. It is applied to the head when there is a determination of blood to that organ—inflammation—or delirium. It is assisted by the partial baths, and wet sheets. During the sweating process, it is useful when there is great fullness or determination of blood to the head—in compound fractures, and in all cases where a lessening of action to prevent inflammation is indicated.

The second, or *warm fomentation*, is the most soothing application that can be made to the external sentient surface. In wounds and other injuries, in ulcers, etc., it exercises the most healing influence of any application known.

Dr. Macartney, nearly thirty years ago, was the first in Great Britain, to call attention to the admirable effects of water applied in this way—he called it his water dressing. Liston, of London, and Symes, of Edinburgh, successively adopted it.

The warm fomentation is usually applied to the abdomen, in the treatment of nearly all chronic diseases, more particularly where there exists diseased action in the liver, stomach, and bowels, or in the ganglionic system in general. It is used in the following way:—A bandage sufficiently broad to reach from the pit of the stomach to an inch or two below the navel, and long enough to meet when passed round the abdomen, after being dipped in cold water, is wrung as dry as it can be: over this a dry bandage of thin linen, or one made of oiled silk, is applied, sufficiently tight to be comfortable to the patient. This is worn day and night, and renewed when the bandage becomes dry; being, in fact, a continued fomentation, or poultice. It attracts to the skin, and general covering of the abdomen, any undue action which may exist in

the lining membrane of the stomach and alimentary canal, by which it reduces the irritation or sub-inflammation ; also, by its soothing and sedative properties, it regulates the bowels, increasing at the same time the peristaltic motion, and facilitating the expulsion of the fæces. After a time, more especially when there is a tendency to crisis, the bandage, when wrung out, is found to be saturated with different secretions from the skin, rendering the water *thick and turbid*. And frequently, a curious phenomenon takes place, which has not yet been explained. After the bandage has been worn some weeks, there is a secretion thrown out on the surface of the epigastrium and abdomen, of a *beautiful dark blue color* ; this continues for a fortnight or so ; sometimes disappearing suddenly for weeks, and then appearing again.

It is of frequent occurrence, and I have ever found it of precisely the same color. It manifests itself principally in severe cases of dyspepsia, and where mercurial preparations had been taken at some previous period.— This water-dressing is applied to eruptions, and different kinds of local affections, which appear during the crisis ; to gouty swellings in the hands and feet ; to arthritic concretions of the joints, or that formation of calcareous matter, the result of gout of long standing, which it never fails to dissolve.

This warm fomentation relieves heart-burn, spasms, and a train of symptoms accompanying dyspepsia.—From the length of time, during which it can be worn, without any inconvenience, it is an excellent remedy, and a valuable adjunct to the general cure. When the compress, or bandage is applied to the stomach, it is advisable in many cases, to confine the *wet part* to the front of the abdomen only, not extending it all round.

With weak and irritable patients, where the abnormal condition of the cutaneous system, is of long standing, a feeling of discomfort is sometimes experienced by its application, particularly when the individuals are in a state of repose: in this case it ought to be discontinued until by the general treatment—by frictions, cold lotions, &c.,—the cutaneous *Endosmose* and *Exosmose** be

* I think it not inopportune in this place, to give an explanation of the terms *Endosmose* and *Exosmose*, for the benefit of the unprofessional reader. They were first used by M. Dutrochet, Member of the Institute of France, in his experiments, and were afterwards adopted by M. Magendie in his physical lectures on the phenomena of life. M. Dutrochet filled a bladder with a certain liquid, which he placed in a vessel containing liquid of a different quality, when he observed that they mutually displaced each other by a double current of absorption—"imbibition à double courant." This was effected by the fluid in the bladder transpiring through its sides, the other fluid in which it was immersed, simultaneously entering it, in equal proportions. The former of these two phenomena he denominated *Exosmose*; the latter, *En-*

better regulated, and the skin perform its functions more regularly and with greater activity.

The wet sheet is an agent of the highest importance: there are two modes of applying it. The one arouses the vital action of the cutaneous envelope, and restores its normal functions, at the same time producing a very calming effect on the nervous system; the other, not only cools the skin, but in an almost incredibly short space of time, by the immediate abstraction of caloric and electricity, reduces febrile excitement. It is applied in the following manner:—A strong linen sheet is dipped in cold water, and wrung till no more water can be expressed without difficulty. A large blanket is then spread on a mattress, on which the sheet is smoothly placed. The patient lying at his full length, nearly on his back, with his head as high as he pleases on the pillow, has the sheet wrapped round him, fitting close just above the collar bones, and down to the feet, which are inclosed therein. The blanket is then, with as much expedition as possible, first drawn up one side

dosome. These phenomena, in a greater or less degree, are observable in the cutaneous system, during the immersion of the body in water, being fully illustrated by this interesting experiment. It may be considered a general law, that the denser fluid will invariably attract the thinner fluid in somewhat greater proportion.

and tucked in well about the neck, under the shoulder, and round the legs, and then the other side over, in the same way as had previously been done with the sheet. A cotton quilt is placed over all, enveloping him closely from the neck to the feet. In this state, the patient is allowed to remain during a half, or three-quarters of an hour, or even an hour. For about two minutes, the feelings cannot be called agreeable, but the unpleasantness goes off quickly, when it is followed by a pleasurable sensation, producing a very soothing and calming effect. The heat of the body not being able to escape, is at first rapidly taken up by the cold sheet; if, in a few moments, the hand be passed over the body, and then applied to the sheet, the former will be found to be cool, and the latter quite warm. Matters are now changed—it is a cool surface and a warm sheet, and so the struggle goes on between the two, till both are warm. When this is effected, the patient takes a cold, or chilled, a half, or a full bath, according to circumstances, dresses quickly, and, when under treatment for chronic disease, takes sufficient exercise to bring on the necessary re-action, during which, from time to time, he drinks a tumbler full of fresh water.

Independently of the calming effects which this mode of applying the wet sheet produces on the nervous system, and the internal organs, it has a great power in

improving the tone and functions of the skin, increasing its action, as I have already observed, and thereby lessening the unfavorable influence that cold and damp, or sudden changes of atmospheric temperature, have upon it. The cold bath is much more agreeable, and is usually taken with much less reluctance, after the application of the wet sheet, as it removes the disposition to shiver on the first contact with cold water.

In eruptive fevers of children, nothing acts with greater promptitude, nothing can be more admirable in its effect than the wet sheet—in scarlet fever, in the measles, in small-pox, and in gastric fevers, and in cephalic irritations, in a tendency to convulsions, in dentition—in fact, in almost all their indispositions, it is a *perfect safeguard*, and has spared many a father the most poignant grief, many a mother the deepest lamentations. An erroneous impression prevails, that it would drive in the eruption; the effect is, however, precisely the reverse, for through its invigorating and revulsive action on the cutaneous system, an eruption is elicited, (without increasing the circulation,) with equal promptitude and equal certainty, which we frequently would in vain try to produce, by our usual pharmaceutical agents.

In inflammatory diseases where we wish to reduce the circulation; where the fever is very high, and the

surface very hot, the wet sheet is changed as often as it becomes warm, until our object be attained. In these cases, it is not wrung to that degree that no more water can be expressed, but just sufficiently to prevent its dripping. The antiphlogistic power of this application really astonishes those who, for the first time, have an opportunity of witnessing it. The most tumultuous circulation, after from six to ten applications, is generally reduced to its normal state, and sound sleep and a wholesome perspiration, with an alleviation of all the patient's sufferings, hardly ever fail to follow its use.—

Its antiphlogistic, sedative, and antifebrile virtue renders it therefore one of the most potent, and necessarily most important therapeutical agents in the treatment of febrile diseases. The author has employed it in cases of typhus fever, in yellow fever, in scarlet fever, in convulsions and cerebral diseases of children, etc., with the most decided and favorable results. He can, in fact, justly say, (for it admits of positive proof,) that the existence of more than one individual has been preserved by its almost miraculous powers; and, indeed, in several cases recourse was only had to it, when the disease had attained its highest degree of malignity, and after the usual therapeutical means had, for days, been vainly applied, although in the most scientific manner. Let those who doubt its efficacy give it only the benefit of a

fair trial, and I am convinced, from experience, that its favorable effects will force them, if even they be the most sceptical on this point, to acknowledge that it is one of the most valuable discoveries of modern times, in the treatment of fevers; and that it can not only safely supersede the so often doubtful use of the lancet, and the application of leeches, but that it is infinitely preferable to both.

The merit of the discovery of the salutary effects of the wet sheet is due to Priesnitz, without any contestation whatever, and had he claims to no further originality than this, it is enough to earn for him the heart-felt gratitude of all those who have experienced its benefits, and the honor with which he will be remembered by posterity.

CHARACTERISTIC PECULIARITIES OF HYDROPATHIC TREATMENT.---CRISES.

The object of Hydropathic treatment is to excite and maintain such a degree of activity in the system, as to lead it to effect a cure through its own powers. In other words, we merely assist Nature in her efforts to re-establish that harmony in her functions, which has for a time been interrupted by disease. *It follows then that a patient cured by this method, will not pass through that wretched intermediate state, between sickness and health, which is*

called SLOW CONVALESCENCE. *Neither shall we have to reproach ourselves with that scientific destruction, which is the result of the profuse use and abuse of medicaments, a destruction which I cannot better designate than by naming it MEDICAL CACHOCHYMIA.* It was reserved for Hydropathy to triumph over this accumulated form of disease—to remove the disorder, which Art itself had added to the one against which she was enlisted to contend.

Call to mind the picture I have drawn of the remedial efforts of nature—efforts to whose *ensemble* I have given the name of fever: analyze them, consecutively; in the cold fit, when every symptom announces a depression of vitality; in the following period of heat, wherein an exaltation of this same vitality produces a wholesome reaction, which alone is capable of terminating disease: then compare these two phenomena, with those which arise from Hydropathic treatment, *and you will be forced to acknowledge, from their analogy, that the latter is but the faithful echo of Nature's unerring laws.*—Hence it is rational in its principles, successful in its application, and true in its essence. To avoid repetition, let me refer the reader to what I have already stated in my description of the feelings and sensations of a man who takes a cold bath. The phenomena which are then developed in him, resulting from the laws of reaction, are of course far more strongly mark-

ed, when these laws operate with greater intensity.— The Hydropathic treatment reveals them in their utmost vigor of action. An abundant perspiration which eliminates the humors, after the heat has been concentrated on the skin, duly prepares the patient to receive from the application of cold water, all its virtues—to draw from it all its healing powers. The consequences are, of course, immediate: after each of these artificial paroxysms, which are the faithful copies of nature's efforts, a gradual increase of strength is perceived; an elimination of the corrupt humors, more or less considerable, takes place; and, at the end, very palpable crises, of which I shall have more to say anon, frequently arise to finish the already incipient cure. It is not my intention to enter now into a minute detail of the different modes of treatment, particularly adapted to every disease; it would extend my treatise interminably. I shall, therefore, conclude this brief sketch of Hydropathy, by saying a few words on the peculiar sensations, which this new method of treatment produces in those who are subjected to its influence.

Hydropathy generates in the sick, peculiar sensations which are produced by no other method of treatment.

From the very commencement of this method of treatment, the patient generally experiences a feeling of

returning vigor, attributable to the awakening into action of the long dormant vitality of the diseased organs. This excitement is not confined to the parts immediately affected, but is quickly diffused throughout the entire system, eliciting in its course those physical reactions, which lead to the discharge of latent morbid matter, and to the due regulation of vital activity. A genuine febrile state is the inevitable result of this general effervescence. The symptoms of the primary disease then acquire greater intensity, the first fruits of which are the reappearance of old morbid affections, which had apparently been perfectly cured. Dyscrasic diseases, such as Syphilis, &c., furnish apt illustrations of this fact. All these symptoms are the precursors of characteristic crises. *Almost all those who have been, for some time, subjected to Hydropathic treatment, experience an itching, burning sensation in the skin, occasionally accompanied by acute pain, which, in certain cases, terminates in an eruption, of small pustules, or red blotches, of various forms and dimensions. In those instances, where disordered innervation occasions functional derangements, where weakness or exhaustion constitutes the sole complaint, these critical phenomena are the only ones apparent.* The return in this case to health is indicated rather by dynamic changes than by physical crises.

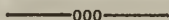
But when we operate on diseases occasioned by physical

deteriorations and alterations of matter, it is then that those critical phenomena are developed, which must carry conviction with respect to the efficacy of Hydropathy, to the minds of the most incredulous. Not only does the surface exhale a copious perspiration, daily increasing in quantity, charged with the distinctive qualities of the different diseases, but numerous abscesses, opening of themselves under the influence of the application of cold water, throw off in large portions, the vitiated humors of the system, to be duly replaced by others of a better and healthier nature. In some cases, the patient is covered with abscesses and ulcers, giving a happy egress to the matter; in others, the evacuation is effected by perspiration, or by urine, or in short, by the intestinal canal; whilst, in the mean time, he feels himself morally and physically renovated; his sadness gives place to cheerfulness; his appetite returns; his nutrition is performed with facility, and his sufferings gradually, but surely pass away. These are truths attested by thousands of absolute facts; facts to which experience is continually adding, even to the hour in which I am now writing.

The most palpable crises are those which principally occur in chronic complaints. If they are less observable in acute diseases of short duration, it is because complete discrasia has not had time to form. The critical phenomena of the latter, announcing returning health,

are free and abundant perspirations, and occasionally the appearance of exanthemata on the skin, such as we have before described.

In this first part of my treatise, I have sought to convey, in as clear and concise terms as possible, the general principles on which Hydropathy is based. But I should think that I had done little, to induce the adoption and application of this method of treating disease in warm climates, if my task terminated here. In a succeeding treatise, which will form the second part of this work, it is my intention to give to the profession and the public, a detailed account of a few of the many serious cases in which it has been successfully employed, and, in the observations which I shall deem it my duty to append to them, I will point out those peculiar features of disease, which are the most interesting to the practitioner, and which best illustrate the excellence of the water treatment.



The following are the diseases, which have to the present time been successfully treated by Hydropathy :

TYPHUS FEVER, and Fevers of a **TYPHOID** character in general.

YELLOW FEVER *

Intermittent Fevers, particularly those of Intractable character.

Inflammatory Fevers.

Inflammation of the Chest.

Quinsy.

Croup.

Inflammation (acute and chronic) of the Brain and its Membranes—the Bronchias—the Stomach—the Intestines—the Liver—the Kidneys—the Bladder.

Erysipelas.

RHEUMATISM (acute and chronic, and of long duration) with Difficulty in the Movement of the Limbs, Stiffness and Swelling of the Joints—Paralysis of the Extremities.

Diseases resulting from an **ARTHRITIC DIATHESIS** of the System, as **GOUT**—a Disposition to the Formation of Gravel—**Tic douloureux**—**Piles**.

Small-pox.

SCARLET FEVER.

Measles.

* Of twenty-four cases of Yellow Fever which have, hitherto, come under the treatment of the Author, by Hydropathy, twenty three have been attended with the happiest results. One of these successful cases, which occurred in 1842, in a gentleman residing in New Orleans, aged 22 years, offers unusual interest; since, before the water cure was employed, the usual allopathic means had been tried in vain, and symptoms of the most unfavorable character had developed themselves—such as Black Vomit and Hiccups.

Hemorrhage from the Nose.

Spitting of Blood.

Vomiting of Blood.

Bloody Urine.

Hemorrhage from the Uterus.

Catarrhal Affections with Abnormal Secretions of Mucus.

Disposition to contract Catarrhal Affections of the Lungs.

Catarrhal Affections of the Bladder.

Influenza, or Grippe.

Dysentery, (acute and chronic.)

Giddiness—Headache.

Dyspepsia.

Hypochondriac Affections.

Hysteric Diseases.

General Weakness of the Nerves, and Nervousness of Females.

Epilepsy, not resulting from a Mechanical Cause.

Chorea, or St. Vitus's Dance.

Tetanus.

Hooping-Cough.

Palpitation of the Heart.

Convulsions, particularly during the period of Dentition in Children.

Cramps of the Stomach—Pain in the Stomach.

Asthma.

Hydrophobia.

Cholera.

Diarrhœa, (acute and chronic.)

Diabetes.

Mental Diseases.

MEDICAL CACOCYHIA, or diseases occasioned by the frequent use and abuse of *Mercury* and other drugs.

SCROFULA.

Enlargement and Induration of the Glands.

Rickets.

SYPHILIS, *primary and secondary*; or inveterate and complicated, with Mercurial Ulcers and Caries.

Gonorrhœa and Gleet.

Leprosy.

Scurvy.

Incipient Amaurosis.

Weakness and functional Derangement of the Generative System;—Impotence.

Habitual Constipation.

Fluor albus, or Fleurs blanches.

Suppressed Menses.

Difficult and painful Menstruation.

Partial or total obstruction of the Menses from other causes than Pregnancy.

Retention of the Menses, or Green Sickness.

Cancerous Ulcers.

Scalds and Burns.

Tetters—Ring-worm—Scald Head.

Chilblains.

Fractures of the Bones, simple and complicated.

Luxations—Contusions.

Wounds.

APPENDIX.

LETTER OF DOCTOR BALDOU,

AND

OBSERVATIONS OF PROFESSOR PELLETAN

ON THE

CALORIC CURRENTS.

APPENDIX.

The following is an extract from a work, published by Dr. Baldou, an eminent Physician of Montpellier, in France, who had been specially directed by the French Minister of Commerce, charged with the sanatory establishments of the kingdom, to visit the different Hydropathic establishments in Germany, and make an official report of his observations thereon. The matter, I have judged it apropos to insert here, taken from his report, will no doubt be read with much interest, since it displays a very ardent desire on the part of Dr. Baldou, to put every available means in requisition, to further and complete the object of his mission. Hence, he was curious to ascertain, before he devoted himself to the study of the curative processes of cold water on the sick, what would be its effect on a person in health, when submitted to the various modifications of appli-

cations, to which the former are subjected. With this view, shortly after his arrival at the Hydrophatic establishment at Boppard, on the Rhine, he underwent a series of experiments himself, and in the report which, according to his instructions, he made to the Minister of State, after his return to France, he gives an account of the process through which he passed, the sensations he experienced, and the results by which they were attended, with a minuteness, which proves at once his devotedness to the cause of science, and the fidelity with which he was determined to acquit himself of his task.

LETTER OF DOCTOR BALDOU.

To the Minister of Commerce, charged with the Sanatory Establishments of the Kingdom.

SIR, In order to arrive at a just and impartial appreciation of the object of my mission, I have taken care to neglect no precaution which I deemed necessary, being, above all, desirous to secure to myself your entire confidence and approbation.

At the commencement of my labors, I determined to set aside every work which had been written on the subject, and to endeavor to forget every thing I had read

on it, that my mind, being clear from any influence or prejudice, might be open to the impression of facts alone.

I was therefore, of opinion, that my best mode of action was, first to study the effect of each of the agents which composed this peculiar method of treatment, on myself, before I entered on the examination of their application to the sick. Afterwards, in my observations on the patients under treatment, I particularly sought to discriminate, carefully, the diagnosis and the etiology of each malady, to appreciate well the relative value of their therapeutic effects.

Of the observations which I have the honor to present to you, Sir, there is not one which I have not personally made, myself, on the patient. There is not a single one which is not the result of an attentive notice of the state of the patient; during one or more periods of his treatment; and in those protracted cases, in which I had not had an opportunity of witnessing the beginning of the treatment, the facts I have reported, beyond the range of my own observation, have been collected exclusively from the testimony of the patients themselves. In no instance have I depended on, or even cited any information regarding them, from the physicians directing these establishments.

I have questioned, I have scrutinized, the patients in

every possible manner, that courtesy or the polite usages of society allowed. I was not in a public hospital or charitable institution, and therefore my position, as a diligent observer, became the more delicate; and it was, only by living in society with the patients, by constantly accompanying them in their different situations; at table, at the baths, during the operation of the douche, in their promenades, in visiting them in their chambers, whilst undergoing their perspiratory processes, that I was able to insinuate myself into their confidence, and thus become acquainted with the details of their antecedent history. I may also remark that the circumstance of my being a Frenchman, operated much toward the success of my investigations, on more than one occasion.

In some instances my researches have proved abortive, through the repugnance of some individuals to enter into a particular description of their maladies, and their processes of cure; this remark will explain the reason why I have only been able to give but a few observations on the maladies incident to females. It will be perceived that between them and me there was an almost insuperable barrier: ladies, in general, do not like to have two confessors.

At Graefenberg, particularly, there is a great deal of Aristocratic company: Princes and Princesses have each

their little court of Marquisses, Counts and Barons.—Hence, rank was another obstacle in the way of my investigations. Often, again, have I been obliged to abandon, with infinite regret, a series of observations half finished, and which would have proved of the highest interest, in consequence of the absence of some details, absolutely necessary to render them complete, and worthy that precision of character, which is indispensable in medical studies in the present age, and which is, particularly in France, now most rigorously exacted.

I have also been able, although preserving with all due care my character as an independent observer, to derive considerable information from the opinions and experience of the medical men who were at the same time at Graefenberg as myself; there were nine of us, Poles, Austrians, Prussians, Belgians and French, and I deem it necessary to record it as a fact, that not one amongst that number, attempted to deny the good effects of the method of treatment we were studying.

I also carefully collected the opinions of the Physicians, at the head of the respective establishments which I visited, from whom I occasionally learned some very happy modifications in the treatment.

I was also desirous of submitting, for your consideration, Sir, a very important document. This was

the report made to the Austrian Government, by Baron Turkeim, Physician and Aulic Councillor.

The Austrian Government, being desirous of knowing something positive respecting what was said of Priessnitz, and his peculiar method of treatment, dispatched to the Hydropathic Establishments the above named Physician, who is so well known by his learning and science, in order that he might render a full account of what might fall under his notice. And it is through the report that he made to his Government, that Græfenberg was admitted to the rank of one of the privileged Hydropathic establishments of the Empire.

It was, therefore, of great importance to me to possess a copy of, or an extract from, this report; and I left no means untried, in order to succeed in obtaining either one or the other.

Baron Turkeim, and Count St. Aulaire, the French Ambassador at Vienna, being both absent from that city, when I arrived there, I addressed myself to the Chancellor of the French Embassy, to whom I confided my request, respecting Mr. de Turkeim. That official personage promised me, that the French Ambassador would support my application, since the Government had particularly condescended to patronize my labors.

Since that time, I have written twice to Vienna, for

this object; once through the medium of the Minister for Foreign Affairs, to which I have hitherto received no reply. I am thus prevented from sustaining my opinions, by those of a man so eminent in every point of view.

Such are, in general, the precautions and pains which I have taken, to be enabled to offer a judgment divested of all prejudice and partiality.

EXPERIMENT.

Effects of Hydropathy on a Person in Health.

“Before studying the application of the agents of Hydropathy, (water, exercise, etc.,) it will be of advantage to exhibit their effects on a healthy subject. I will, therefore, give a description of the experiment which I have made upon my own person.

Two days after my arrival at the establishment of Boppard, on the Rhine, at five o'clock in the morning, I was wrapped in blankets in such a manner, that no air could penetrate between them and the body. I naturally perspire with ease, and therefore at the end of a quarter of an hour, I was in a profuse sweat. As the only object was to condense about my person, such a quantity of caloric, as to allow of my being submitted to a cold affusion, I was then disembarassed of my wrap-

pers, and placed in an empty bathing tub. A quantity of cold water, amounting to about a bucket full, was thrown upon me at different intervals. The effect was very powerful; the blood driven from the periphery of the body, by contact with the cold water, was repelled toward the centre, particularly toward the lungs; which occasioned some difficulty of respiration. This effect was only momentary. After being wiped and dried with care, I was recommended to take exercise, which is essential after every application of cold water, in order to sustain the reaction. In dressing myself, I felt a genial warmth diffused over the surface of the body; a facility, a suppleness, and an energy in the play of all my organs, such as I had never before experienced.

I had some writing to do, which I wished to finish before going out; the re-action did not continue, and I became cold and uncomfortable. To repair this act of imprudence, I set off running, and after having reached the summit of a hill, the heat again returned, accompanied by a gentle perspiration.

I learned by this little misadventure, the importance of following exactly the advice which had been given me, and I therefore took it as a warning.

These affusions, as may be perceived, would be dan-

gerous to persons, whose thoracic organs are affected by organic lesions.

The same day, at six o'clock, P. M., I took a douche.

The third day, I was wrapped in a blanket; at the end of ten minutes, I was in a state of perspiration. They then gave me cold water to drink, opening the windows of my bed room, which afforded me great relief from the uncomfortable sensations to which I had been subject from such a position,—without however stopping the perspiration. I drank four tumblers of water in the space of half an hour, and at each draught the perspiration only augmented. My pulse was not sensibly increased in frequency or in force, nor did I feel any congestion in the head.

The half hour being elapsed, my legs were freed from the blankets, to enable me to repair to the bath. On reaching it, I first wet my head and stomach, and then threw myself into the water. I remained only sufficient time to admit of my making four or five plunges; the physician who presided over this operation, having recommended me to dive in my head first, in order to avoid determination of blood to that organ.

I came out of the water after about two minutes, my skin being very red. The reaction was much less than that of the preceding day; I sustained it, however, by a

walk, and found myself much better for it, during the whole day. I must confess here that it was not without emotion that, thus covered with perspiration, I was induced to enter the cold bath; and yet, I had the guaranty of two physicians, and what was still better, the example of more than a hundred sick persons, to encourage me. But, independent of the firm determination I had taken to follow out the plan I had traced, I had still another reason for not retreating: this was the fear of drawing on myself the railleries, which the patients had not spared a French Physician, on a similar occasion. The latter, who belonged to the army, and had often dared, without shrinking, the grape shot and musketry of the enemy, could never summon sufficient resolution to enter the water in this state; but, after remaining some moments in suspense, on the edge of the tank, was not ashamed to beat a retreat; such and so great is the force of prejudice.

This bath, taken after perspiration, becomes, in the course of a few days, the most agreeable part of the treatment, which no one would believe, with the exception of those who have made a trial of it. The body, saturated with caloric, supports not only without pain, but absolutely with pleasure, a contact with cold water, which restores to the skin that tone and that strength, of which an

abundant perspiration had previously deprived it. The patients would even gladly expose themselves to a prolongation of the bath, if the physicians did not watch them, in order to prevent any transgression of their directions. The evening of the same day, I took a *wellenbad*, or undulatory bath, the effect of which I found extremely agreeable.

The fourth day at eleven o'clock A. M., I took a *staubbad*, or bath of fine rain. The action of this bath I found less pleasant. The thousand jets of water struck on all parts of the cutaneous surface, like the points of so many needles; but the irritation was entirely confined to that membrane. The shock of these little columns of water is not sufficiently strong, to be transmitted to the interior, and the heat I experienced after this bath, was almost null. I have found that principally those patients who have been afflicted with nervous affections, such as irritations or spasms, are those who experience the most decided benefit from its application, as the douches would be too exciting for them. The good effects, which they experience from it, are no doubt owing to the revulsion which carries to the skin, the exaltation of their nervous system. However it may be, I affirm the fact, and I leave to others the task of its interpretation.

On the fifth day, being troubled with a slight headache, I did nothing, expecting that this indisposition would pass off.

The sixth day, the headache having increased, my eyes could no longer bear a strong light. I was ordered a cold sit bath, of twenty-five minutes duration. My headache did not increase whilst I was in the bath, which astonished me much, as I had not applied any wet compress to the head, and I fully expected a determination of blood to that organ. When I quitted the bath, the sanguineous turgescence toward the pelvis and the abdomen was considerable; the skin over these parts was very red; my headache had almost entirely disappeared, and my eyes were perfectly free from any unusual sensibility. Without this accident, I should never have been able to comprehend all the energy and efficaciousness of a cold sit bath.

The seventh day, at five o'clock, I was enveloped in a wet sheet which had been wrung out; after which I was covered again with a blanket, and a feather bed. The first impression occasioned by the contact of the wet sheet was a little painful; but soon, the sheet being protected from the air, and the water which it had imbibed not being able to evaporate, the cold sensation gave place to a gentle heat. Five minutes sufficed

to put me in full perspiration. The rest passed as before. Nervousness not being predominant in my constitution, I did not experience from this variety of envelopment, all the good effects which those who are thus affected, are susceptible of deriving from it. I cannot, therefore, by the experiments on my own body, duly appreciate all its importance, except from the effects which I have observed in others.

I followed, rigorously, the regimen of the sick, without feeling sensibly changed by it; I drank water moderately, and found it to produce no other effect than that of relieving me from a very severe constipation, to which I had for some years been subject. At the present period, even, whenever I find myself constipated, I have recourse to water, of which I drink three or four tumblers, on an empty stomach, and always with relief. I recommend this mode of using water, to persons of a bilious temperament, who are generally constipated; assured as I am, that they will not fail to congratulate themselves on its good effects.

I shall conclude this first part of my treatise on Hydropathy, by appending a free translation of some observations of Doctor Pelletan, Professor of Physics to the Faculty of Medicine of Paris, which I think will be perused with great interest by many of my readers. He is the author of an excellent work, entitled, "Traité de Physique générale et médicale."

OBSERVATIONS OF PROFESSOR PELLETAN ON THE CALORIC CURRENTS.

The Memoir which I now re-produce, was published in December, 1826, in the "Revue Médicale." Probably, at that time, the medical world was not ripe for the observations which it contained; however this may be, it was taken little notice of, and at the present moment is little known:—

I beg to submit the following observations to the examination of my enlightened professional brethren:—

I have shown, in the Memoir published in 1826, that the *organic activity was in proportion to the quantity of*

the currents of caloric which traversed the organs. That the rapidity of these currents can be increased by the external subtraction of caloric, as well as by an excess of its natural production, provided that in the first case, the internal powers be sufficient to supply the demand.

There are a number of facts in the practice of medicine which prove, that restoring the organic action, weakened or suspended, is one of the most powerful means of curing disease.

Cold baths and affusions have been employed to awaken the general powers of the constitution ; but they were only applied in a transient and imperfect manner. Edwards has proved, that *winter* renders the animal economy *apt for the production of heat* ; the daily application of artificial cold ought to produce the same effect.

A great number of facts, obtained without any preconceived theory, show that cold water has a curative action in the highest degree.

It is then but rational to believe, that the curative effects of cold water constitute a powerful medical means, applicable to a great number of morbid affections, and ought to be made known. I shall only add a word on the employment of the sweating process. It had already occupied a prominent place in our treatment, but it must be confessed we were deficient in the means of

producing it at will, and above all, without running some risk of doing more harm than good in the attempt.

The method of Priessnitz appears *rational, curative, and safe*. It only remains for me to repeat my Memoir, with a few notes.

Memoir of the Phenomena of Heat which are produced in Living Beings.

It is an opinion, generally received, and confirmed by all observations, that certain phenomena of heat, more or less evident, take place in all organized beings actually living; and this coincidence is sufficiently general, to impress it on the minds of physiologists, that caloric is the principal excitant of the organs, and the cause which determines and modifies the performance of their functions.

If this is the case, the study of the phenomena of heat in the organic system, is interesting in the highest degree, to the physiologist and the practitioner.

It may, in fact, be remarked, that much research has been directed to ascertain the proper temperatures of living beings, and to assign their causes; these scientific researches have already been crowned with important results; but the physiologist studying the vital phenomena, has found but few and imperfect relations

between these phenomena and the temperatures observed. A number of creatures with vital powers of great activity, possess but a very low temperature; the greater part, instead of having in reality any fixed temperature, have in fact only that by which they are surrounded, and have the power of supporting its changes with so little inconvenience, that they merit the name of organized beings of variable temperature.

Warm blooded animals, whose internal organs possess in general, a more elevated temperature, steadier, and more indispensable to the sustaining of their existence, do not less present the most marked discordance, between the variations of their temperature and the state of their functions. One may remain unchanged, while the other may be raised to the highest degree of energy; and although we still consider caloric as the principal excitant of the organs, it must be acknowledged that the elevation of the temperature, frequently produces a weakening of the functions, and even death; whilst a suitable application of cold excites and re-establishes the vital phenomena.

Even in medical practice, and by our therapeutical agents, we see with surprise, that the action by which we cool the vital organs, produces the opposite effects of sedation or of stimulation; we may, it is true, explain

this, by supposing that the organs re-act after the influence of cold, which is always at first, sedative. But do we not find in this explanation, traces of the vague hypothesis which unfortunately marks most of the physiological questions, which as yet have not been sufficiently elucidated by the other sciences ?

If it is true that the particular state, which is called temperature, has so little connexion with vital phenomena, it becomes important to remark, that this state ought only to be considered as a functional result, that depends on the accidental proportion, which may be established in each living individual, between the loss and the acquisition of caloric, of which he is susceptible; whilst the simultaneous existence of these acquisitions and losses, necessarily produces, through the organs caloric currents, more or less rapid; whence, it may be concluded, that the passage of caloric through the organs, is here a primitive phenomenon, and the temperature, a secondary result.

It might be already concluded, from these isolated arguments, that it is important to study the caloric currents, which are produced in the organs of living beings; and that the consideration of this, should enter into all physiological and medical reasonings; but my object in this Memoir, is to developpe this proposition, viz: in prov-

ing successively,—1, that a given body may be the seat of currents of heat, more or less rapid, independently of the temperature in which it is placed; 2, that our organs are peculiarly sensible to the passage of caloric through their tissues; 3, that all organized beings are in the condition necessary to become the seat of caloric currents; 4, the vital phenomena, and the energy of organic action, appear to be in proportion to the rapidity of the caloric currents, rather than in proportion to the temperature; 5, that the adoption of these principles may serve to explain, in a satisfactory manner, a great number of the phenomena of vital heat, which, without them, could not be explained, and would be considered as anomalies.

SECT. I. — *A given body may be the seat of Currents of heat, more or less rapid, independently of the Temperature in which it is placed.*

In fact, if we suppose a bar of iron, heated at one extremity, and cooled at the other, a thermometer placed in the centre will remain at a certain degree, which will depend on the difference between the temperatures of the two extremities, and of the conducting property of the body; but one may conceive, for a fixed

temperature in the middle of the bar of iron, that there will be an infinite number of different cases, provided that the cooling produced at the extremity of the bar, be always in a given proportion with the elevation of the temperature, at the other extremity; one may also understand that the current may become more rapid, and the mean temperature be lowered, if the cooling be increased; and that, on the contrary, the current may become slower, and the mean temperature rise, if the cooling become less intense; from whence it results, that the rapidity of the caloric currents in the bar of iron, is in no way indicated by the mean temperature of its central part; is not in proportion to its temperature in that part, and even may be found in contradiction.

It is true, that physical experimentalists have not as yet inquired, what change the existence of a current of caloric, more or less rapid, may produce in a mass of brute matter. Nevertheless, we may readily observe:—

1. That a galvanic current is produced, in many cases, where the conducting body is the seat of caloric currents.
2. That several metallic bodies, and some fusible substances, as phosphorus, become possessed of peculiar properties when they are cooled with rapidity.
3. In fine, that many organized bodies experience, during the increased movement of their liquid parts,

many important changes, according as this movement is increased or diminished in rapidity.

The observations which have been made, may be compared with what has been seen to take place in the study of electric phenomena. The electric phenomenon with tension, was soon understood, and what is called temperature means nothing more than the actual quantity of caloric in a body; the properties which metallic wires contract, when electric currents were made to pass through them, was a later discovery; it is probable, that yet valuable discoveries may be made by studying those properties of bodies, which are actually the seat of caloric currents, more or less considerable. However this may be, the existence of these currents is indubitable, and the time will not be thrown away in studying, on the same system, the phenomena of vital heat.

SECT. II. — *Our Organs are particularly sensible to the passage of Caloric through their Tissues.*

It may be added, that this passage is the only admissible cause of the sensations of heat or cold, which our organs afford: in fact, the impression produced in the hand, by a liquid in which it may be plunged, is no way in proportion to the existing temperature of the liquid;

it depends solely on the difference which exists between its temperature and that of the hand, on which the experiment is made. The same liquid, at the same temperature, appears at one time warm, at another cold, according as the hand is warm or cold, so that the sensation of warmth is produced on the skin by a caloric current, which enters, and the sensation of cold by the same current, escaping in a contrary direction; and moreover, when the liquid is of the same temperature with the external surface of the skin, no sensation either of heat or cold, will be felt.

In reasoning on phenomena which are not accessible to our senses—from comparison with others which are of easier investigation—we may conclude, that the internal organs, which do not, under ordinary circumstances, transmit sensations, are powerfully acted upon, by the passage of caloric through their tissues.

SECT. III. — *All organized beings are in the necessary condition to be continually the Seat of Caloric Currents.*

This proposition requires for its elucidation, that we explain, first, what are the necessary conditions for the existence of a current of heat through bodies. It is true that they may be reduced to three: 1. A source

of caloric. 2. A means of throwing off caloric. 3. A means of conveying, or a conducting property, in the substance in question.

As regards the source of caloric we may observe, that it may be of two different kinds; that there may be a local production of caloric as the result of special phenomena, as in animals that breathe; or that the object may be in constant communication with a common source, which affords it a continued supply of caloric, as takes place in the vegetable creation on the surface of the globe.

As to the means of the deperdition of caloric, they may be of two kinds; by contact with cold objects, or by the change which takes place in liquids during their transformation into vapour.

As far as regards the conducting property, it is rare and very imperfect in solid bodies, being confined to metals, which possess it to a certain degree, and being nearly null in liquids and gases; but caloric may be transported with great rapidity, from one place to another, by the mobility and the displacement of the liquid molecules, in consequence of which this means of conveyance is more powerful and rapid than the conducting property of solid bodies. After having laid down these principles, we will examine, in succession, the great

division of organized beings, to ascertain if, in fact, all present, without exception, the conditions necessary for the existence of currents of caloric.

Vegetables exist with their roots implanted deep in the earth, or in a liquid, both of which can furnish them an unlimited quantity of caloric; an uninterrupted circulation, more or less active, supplies them continually with fluids at the temperature of the earth in which they are placed; the contact of a colder air, under certain circumstances, besides the great evaporation which takes place alone, at the more elevated part of the plant, are causes of the production of cold which determine the existence of currents in their interior parts; but, if the ascending fluids arrive at a higher temperature than the interior of the plant, the descending fluids have become cooled, so that there is not an organic layer in the whole tissue of a vegetable production, which is not found situated between fluids of different temperatures, and in consequence becoming the seat of caloric currents. We may again remark, that in those plants called Dicotyledons, which grow in layers, it is at the point of contact in the ascending and the descending circulation of the tissues, that almost the whole of the process of vegetation is performed.

The animals which exist in water may be divided into fish, and those which are called cetaceous. The former have appeared to most observers, to possess the same temperature as the water in which they exist, which seems to exclude the idea, that caloric currents traversed their organs. Nevertheless, it may be remarked, that it is extremely difficult to determine exactly the fact of a slight difference of temperature between that of a fish and the medium in which it exists. Davy found the temperature of some fish, some degrees higher than that of the sea; fish have the faculty of resisting the cooling of the liquid in which they are placed, to a certain point, and being endowed with respiratory organs, they must possess an active function for the development of caloric.

These considerations authorize us in admitting, that fish produce a certain quantity of caloric, which is regularly abstracted by the medium in which they live; which is sufficient to establish the existence of currents without permitting a very evident elevation of temperature; and we are more particularly inclined to adopt his opinion, because when they are suddenly placed in a situation of higher temperature, they perish, which takes place by the currents of caloric from the interior to the exterior being arrested, whilst they can bear a

much higher temperature, provided that it is applied gradually, which is explained by the fact, that as their bodies are gradually heated above the surrounding temperature, they still experience currents of caloric by keeping up the contrasts.

The whole tribe, having respiratory organs of a higher order, possess a greater degree of temperature; but their bodies being enveloped in thick masses of fat, these prevent the rapid loss of caloric by the surrounding medium.

Animals which live in the air, having vesicular lungs, are always of a temperature somewhat higher than that by which they are surrounded; they have, therefore, in themselves, a means of producing heat; abstraction of this is continually experienced, either by transpiration, or by contact with colder matter; and their active circulation carries with rapidity the caloric produced by their internal organs, to all parts of the economy, more particularly to the parts where the loss is greatest.

It is essential to remark, that these animals which have the power of throwing off caloric, otherwise than by simple contact, that is to say, by the evaporation of liquids, whilst in the elastic medium which surrounds them, are already capable of supporting, without per-

ishing, sudden elevations of external temperature, which would at once kill a fish. It is easily understood, in fact, that in a liquid medium there is but one way for caloric to be carried off—namely, the contact of the liquid; while, on the other hand, by living in the air, this cause of loss of caloric is easily supplied by the powerful effects of evaporation.

Warm blooded animals possess, in the highest degree, the conditions necessary to the existence of caloric currents through their organs; their complete and extensive respiratory apparatus acts on the whole of the circulating mass of blood; their circulation is performed with energy and rapidity; both functions may be increased or diminished, in a way to augment or decrease the production of caloric.

They are placed in a position to experience the constant loss of caloric, by contact or evaporation, as their natural temperature is above that of the elastic fluid which surrounds them; thus, a considerable transpiration, which may be augmented by external influences, enables them to support, without perishing, external heat of a very high degree. The perfection of the means necessary for producing currents of heat, which is met with in warm blooded animals, enables us to exemplify all our ideas on the existence and the effects of these currents.

It is important to take into consideration, in the first place, that, in general, the corporeal mass of such an animal receives its heat from the interior, and is cooled from the exterior; and besides, the internal surface of the lungs is also active in loss of caloric; so that we must necessarily admit that the substance of the organs is incessantly traversed by quantities of caloric, which depends simultaneously on the rapidity of its production, the activity of its transmission, and the relative quantity of waste in a given time; so that, for example, the rapidity of the current will become diminished;—1. If the production becomes slower, from the respiratory functions being less energetic. 2. If the transmission be less rapid, which will depend on the actual state of the circulation. 3. Finally, if the external waste is interrupted or diminished, by the elevated temperature of the surrounding medium; by the presence of a great quantity of existing vapor; or, by the immersion of the body in a liquid of an equal degree of heat with itself.

Independently of these general effects, we should remark, that the important vital phenomena which take place in the tissues and solids of which the organs are composed, admit of an active state, or a state of activity of all the solid matter, which forms the vessels or cells containing fluids; it is important therefore, to examine,

whether these caloric currents actually can, and ought to exist in the interior of organic tissues. It is now generally admitted, that the arterial blood, in its exit from the lungs, possesses a temperature more elevated than the rest of the body; and it is probable, that when it changes its state in the capillary system, it has the capability of disengaging a still greater quantity of caloric.

The arterial blood is rapidly transmitted to all parts of the body, at first, by very large vessels deeply seated, so as to avoid any premature loss of heat. On the other hand, the venous blood, returning from all parts of the body to the heart, cannot, and does not possess, any other than the temperature of these parts, which is lower than the arterial blood. The venous blood returning slowly, and passing through dilatable vessels, of which a great number are placed near the surface, becomes lower in temperature, by being brought into a more direct contact with the cause of cold.

From these explanations, we must conclude, that the whole organization is continually traversed by fluids, of different temperatures, so that every part of the body, taken separately, can, and must be, the seat of caloric currents, passing from the arterial to the venous blood. It is also evident, that the heart and the lungs are the

organs, in which these currents are most considerable, because they are incessantly penetrated by a mass of these two fluids, at unequal temperatures.

May we not find in such considerations an explanation of the idea of Bichat, who saw that the organs perished, when they were filled with black blood?—and do we not find the explanation of the phenomena of Asphyxia, in admitting that the organs die, when they are filled with fluids of the same temperature, which consequently, can no longer produce currents of heat?

SECT. IV.—*The vital phenomena and the energy of organic action, appear to be in proportion to the rapidity of the Caloric Currents, rather than in proportion to the Temperature.*

A great number of facts, and remarkable circumstances, which are constantly met with in living beings, present themselves at once to the mind of every observer, who supposes the existence of caloric currents, and add to the confirmation of the proposition; but it will be useful to mention a few of the principal ones.

The vegetable world is in a state that has been compared to sleep, in which life appears latent as long as plants are deprived of their great means of evaporation, and this depends on the heat of the air, and the presence of the leaves, but as soon as they are fur-

nished with transpiratory organs, their vitality becomes remarkably active; they not only grow, but they reproduce new organs, and quickly replace those which have been cut off; this increased action cannot be attributed to the elevation of the temperature alone; for the extremity of a vine branch produces fruits and flowers, when introduced into a hot-house, although all the rest of the plant remains exposed to the cold of winter; besides, it is known, that the internal parts of a plant are often much colder than the atmosphere, and that the folded leaves may even contain icicles during a tolerably warm season; in general, the activity of vegetation may be considered, in proportion to the evaporation of which the plant is the seat, and consequently, to the caloric current by which it is traversed.

In cold blooded animals, in general, and man in particular, whose physiology interests us more especially, it is evident that the vital energy is never in proportion to the temperature, whilst all the causes which produce a rapid passage of caloric through the organs, increase simultaneously the intensity of their action.

No warm blooded animals can bear, for a long time, immersion in a liquid, at the temperature of its own body, although it still possesses the pulmonary transpiration, as a means of throwing off heat.

A warm and humid atmosphere produces in all animals a feeling of general debility, for heat and moisture have the effect of raising the temperature of the animal, but diminish the two means of disengaging heat, and consequently the rapidity of the caloric currents.

On the other hand, the influence of a cool and dry atmosphere produces a feeling of activity, and general excitation, as long as the internal means of creating heat, supply the expenditure, and keep up the currents.

An individual in the highest paroxysm of fever, presents a state of temperature, which differs little from that of a healthy man; nevertheless, all his organs, without exception, are in a high state of excitation; but it is easy to comprehend, that the means of producing heat are increased, that its transmission has become more rapid, and that the waste is proportionably augmented; so that, although at nearly the same temperature, the organs are, in fact, the seat of currents of caloric, much more rapid than usual.

The same may be said of an organ in a state of inflammation, in which all the vital phenomena are found considerably increased, although its temperature is not sensibly elevated; the transmission of a greater quantity of arterial blood through the inflamed organ, increases the source of heat; an abundant perspiration

carries it off with great celerity; but the organ is not the less traversed by too rapid currents; which explains the excitation, and the sensation of heat that it produces in the brain, whilst the observation on the temperature throws no light on these phenomena.

SECT. V. — *The adoption of the preceding principles serves to explain, in a satisfactory manner, a great number of vital phenomena, which, without them, could not be understood, and would, therefore, pass for anomalies.*

It will be sufficient, by citing a certain number of remarkable circumstances, which hitherto could not be explained, to give an idea of the importance of understanding the influence of the caloric currents.

The immersion for a short time in a cold bath, and the other momentary applications of cold water, may be considered as the most energetic stimulants of our functions; but they are not applicable to individuals, already too weak to offer a chance of producing what is called a *reaction*.

Without denying the influence which vivid sensations, produced on the skin, exert on the general execution of the functions, it appears evident, that a not long continued cooling of the skin, is particularly adapted to render the

currents of caloric more rapid, from the interior to the exterior, provided always, that the internal production be sufficient to meet the demand; which, according to our theory, accounts satisfactorily for this phenomenon, and for the tonic action of cold baths in general.

The continued application, however, of ice, or a cold liquid, on a part of the body, corresponding with an inflamed organ, not very deeply seated, is one of the most powerful sedatives that can be used in practice, and this seeming contradiction can be easily explained, when it is considered that cold, applied superficially, is also a means of producing currents, and that a cooling which penetrates deeply, arrests and diminishes them; because in general, the quantity of caloric transmitted by a body, is in proportion to its temperature; for instance, a slight and superficial cooling on the surface of the head, will cause the internal parts to be traversed by a greater quantity of caloric currents, whilst, when the cooling is continued and enters deeply, affecting the whole of the cerebral substances, the brain and its membranes will, in this state, be only traversed by very small quantities of caloric. Besides, by this lowering of the temperature, the circulation is diminished, so that the means of a new supply of caloric, is in a great measure cut off.

It has generally been observed, that inflammation of the mucous membrane of the lungs, is more frequent than any other, and that it is produced by the respiration of a cold, as well as by a hot and dry atmosphere; as regards their frequent occurrence, it is evident, that the skin, as well as the mucous membrane of the lungs, being exclusively engaged in the deperdition of caloric, must frequently experience very rapid currents, and that these effects should be much more marked in the pulmonary mucous membrane, in consequence of the great quantity of arterial blood passing through the lungs.

The application of a cataplasin, or fomentations, to an inflamed part, is eminently useful in preserving and even increasing the local temperature; nevertheless, it evidently diminishes the sensation of heat and pain in the suffering part. Exposure to cold air, on the contrary, increases the pain. How can these phenomena be understood, if we do not admit that the cataplasin, forming a kind of local bath, suppresses the transpiration, and the losses of caloric by transmission, and consequently, the two causes which render the currents of caloric more rapid in the inflamed part, are diminished?

Here, then, is the time to remark, that a great number of affections which are commonly attributed to suppressed perspiration depend, on the contrary, on causes

which have rendered it more active for a time—for instance—exposure to a current of air. Are not, therefore, the inflammations which follow as a consequence of this, satisfactorily explained by the preceding arguments?

When an individual rubs his hands, for a certain time, with snow, whilst the snow is still in contact with the skin, there is a sensation of great heat experienced, and the skin becomes perfectly red; during this time, the thermometer shows that the temperature is very low; the passage of caloric arriving rapidly from the central organs to the cold surface, is the only way of explaining a similar effect.

When the circulation of any part of the body, has been almost completely interrupted, by a long continued exposure to cold, the application of heat is a sure way to cause its complete destruction. To render the general circulation as active as possible, and to rub the frozen parts with snow, are the means which experience has taught the inhabitants of the North, to be the only safe and effectual way of restoring their functions; and the salutary result can only be explained, by admitting that *vitality is restored to the organ, when currents of caloric are produced, and not by the application of heat.*

Finally, the number of supposed aberrations of ani-

mal heat, those sensations of heat and cold which the thermometer does not indicate, and which, to the present time have been considered as vital phenomena, independent of the ordinary laws of physics, appear to us to be explained by these same laws, if it be admitted that our organs are sensible to the passage of caloric, without reference to their actual temperature, and that the rapidity of the currents obeys the three influences already mentioned.

We cannot dissimulate the circumstance, that, whatever may be the number and exactness of the facts, on which is founded the theoretical idea which forms the subject of this Memoir, it still remains in the class of those hypotheses, which are not susceptible of direct demonstration; but we believe, notwithstanding, that this kind of discussion is not without its utility in the sciences, when the object is to bring together a greater number of phenomena, under the same principle already adopted, and thus to diminish the number of suppositions, which we are obliged to make, in order to understand and assimilate the natural phenomena. I have been persuaded to publish these ideas, by many of the most eminent of my professional brethren, and it may be hoped, that by submitting them to the examination of a great number of enlightened medical men, they may become the

means of producing some valuable mode of application in the practice of medicine. I have already attempted this; the particulars of which I will give in another Memoir.

END OF PART FIRST.

ERRATA.

- Page 18—Line 6th—For *Alloopathy* read *Allopathy*.
“ 18— “ 10th—For *Alloopathic* read *Allopathic*.
“ 43— “ 18th—For *Hydropathic Science* read *Hydropathic Treatment*.
“ 45—Last line—For *head* read *heads*.
“ 46— “ 17th—For *coloric* read *caloric*.
“ 72— “ 8th—For *catarrhall* read *catarrhal*.

